AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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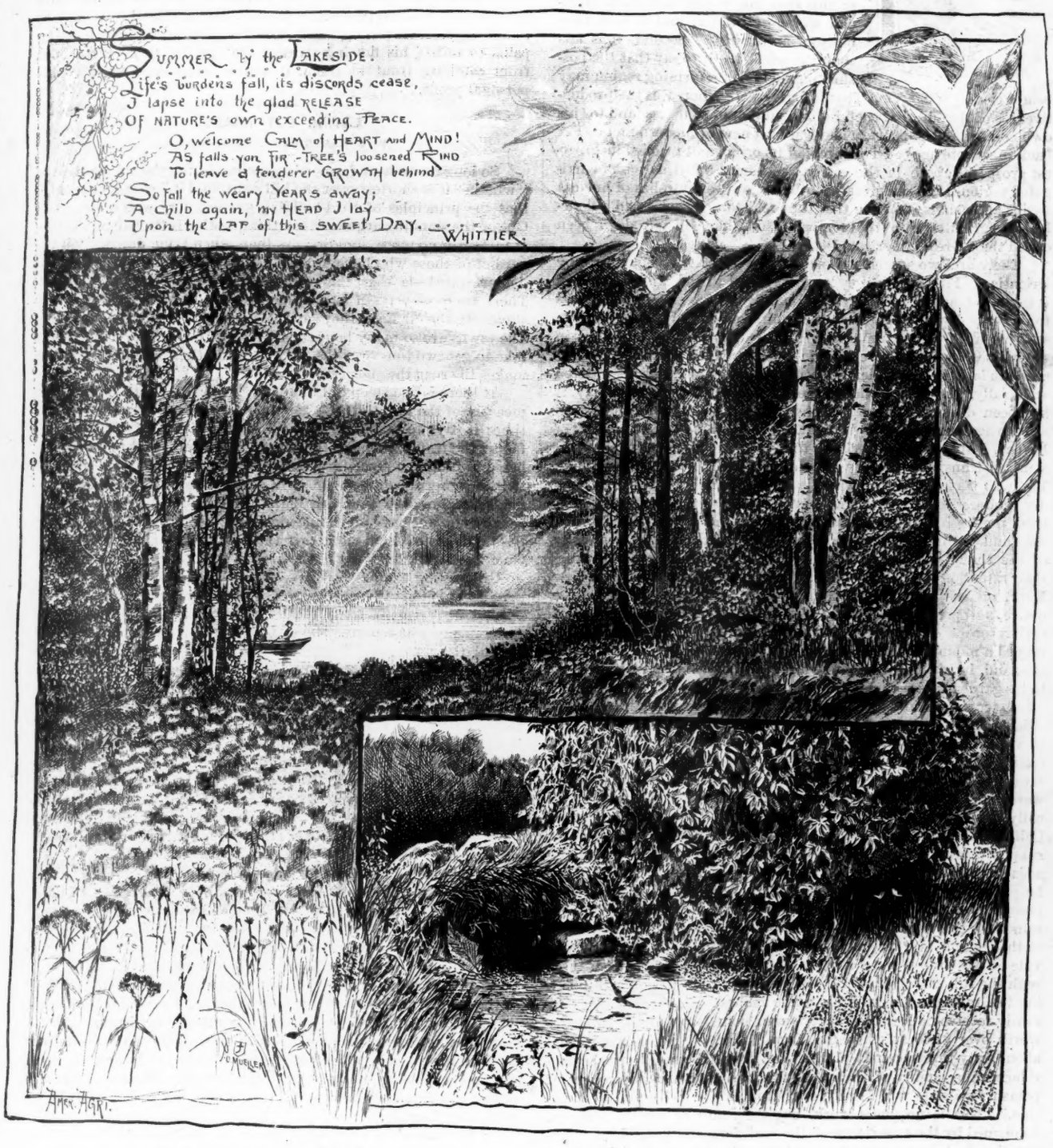
SUMMER by the LAKESIDE.
Life's burdens fall, its discords cease,
I lapse into the glad RELEASE
Of NATURE'S own exceeding PEACE.
O, welcome CALM of HEART and MIND!
AS falls yon FIR-TREE'S loosened RIND
To leave a tenderer GROWTH behind
So fall the weary YEARS away;
A CHILD again, my HEAD I lay
Upon the LAP of this SWEET DAY.
WHITTIER.
C. MUELLER
AMER. AGRI.

"All green and fair the summer lies, Just budded from the bud of spring."

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THE NATIONAL IMPORTANCE OF IRRIGATION.

IRRIGATION has not received the attention from the country at large which it really deserves. The importance of it may be seen by a glance at certain facts. First, in nearly two-fifths of the area of the United States the climate is so rainless that without irrigation agriculture is practically impossible. A great portion of this area can be provided with artificial storage of water, and it will then blossom as the rose. Second, it is less than the whole truth to say that the possible population of a farming region may be doubled by irrigation. That is, irrigation so increases the productiveness of the soil that each individual requires far less land for his own comfortable support. These are not new or modern facts. Far back in remote ages agriculture had its origin and reached its greatest prosperity, both in the eastern continent and this one, in irrigated regions. In our great Southwest are many relics of ancient basins and canals, showing that the prehistoric peoples had a flourishing agriculture in the regions which have in our days been called the "Great American Desert."

There are two special reasons for the superiority of culture by irrigation. First, the water can be applied to the land just when it is needed, and in precisely that quantity which experience shows to be best. Every living farmer of unirrigated land has, in his day, seen his crops ruined, or greatly damaged, by untimely drought in some cases, and excessive rain in others. These sources of injury are both lacking, as a rule, in the agriculture of arid regions watered artificially. Even in sections where the annual rainfall is heavy, it has been discovered that a system of irrigation is of important service against periods of drought. It is a common sight in parts of France, Italy, and Switzerland, that of narrow irrigating ditches, slanting transversely down the mowings on undulating ground. The writer's last visit to Switzerland was during what was called a dry summer, but the tourist would never have detected the fact from the fresh appearance of most of the grass land. In Florida, the annual rainfall is ample, were it evenly distributed, yet many of the thoughtful orchardists of that State are seriously turning their attention to the subject of irrigation. A farmer living in New York, on the edges of the Adirondacks, has often attracted the notice, and perhaps the envy, of his neighbors by his abundant and thrifty crops of "garden sass." The secret of it is that he has tapped a mountain stream which runs along the edge of his premises, and, by a simple system of ditching, has conducted its waters to his garden in dry times.

A second advantage of culture by irrigation is found in the fertilizing effect of the waters. No compost of man's device can equal in value these beneficent streams, freely supplied by nature. Of course this element varies in different cases, and, for intelligent farming by irrigation, a knowledge of the chemical qualities of the water employed is quite essential. To illustrate this point practically, let us take an extract from a report issued last year from the California Experiment Station. The writer is speaking of the water supply coming from the upper San Bernardino Valley and the adjacent mountains. He says: "There is one point that must not be passed over in the valuation of these waters for irrigation purposes. It is the unusually large proportion of potash salts contained in them, which, at the rate at which water is commonly used in that region—say one inch to five acres—will amply suffice to provide all that most crops require of that important fertilizer. For, with the full use of one-fifth inch through each year (corresponding to a rainfall of nearly thirty-five inches), each acre would currently receive no less than forty-seven pounds of potash sulphate, worth over $1.65 at wholesale, from the artesian-well water, and about sixty-three pounds of the same from the creek water. Considering the quality of their soil, this means that the purchase of potash fertilizers will hardly ever trouble the irrigators of Riverside." This is no guess work, but the result of careful analysis, confirmed by the experience of the fruit farmers themselves. Taking this fact into account, together with the wonderful natural fertility of the soil in most of that region, it is not strange that the lucky possessor of fruit farms thereabouts aver that they can reach affluence with ten acres there as easily as they can half starve on a hundred or two in New England. It would be too much to say that the irrigation of crops would pay in all cases. For instance, it might hardly pay, as a rule, to increase the yield of a wheat-field ten or fifteen bushels an acre by means of irrigation, for the expense of the water and the contingencies of the wheat market would set off the increase of production.

Yet this, even, has been done in the San Joaquin Valley, California, where all the conditions of soil and water were favorable. Winter wheat has been brought to a yield of forty to sixty bushels an acre. Even in this favored spot, however, fruit culture is found more profitable and is superseding that of wheat. Yet there are cases, not only in the Southwest but all over the country, where irrigation might be, at times, applied with little expense and great benefit to farm products. Even in New England there may be found not a few farms on which, had the proprietor taken half the pains to utilize his flowing streams that he has to keep the boys from catching trout in them, it would have been more to his personal profit.

LAYING OUT ROADS.

W. E. PARTRIDGE, NEW JERSEY.

So long as we hear farmers' boys considering the old question of "whether it is shortest over the hill or around it," we may conclude that the principles of road-building are not very well understood. One of the standing arguments on this question is the bail of a kettle. It measures no more, standing up, than when lying down. Yet the verdict of those who have studied longest—a verdict which can be demonstrated—is that the road around the base is the shortest. There are more ways of measuring a road than by the use of a yard-stick. In the far East, they say the journey is so many hours long. The towns are so many hours apart. Now, figure how long it will take to get two tons over the hill or around the base, and see which makes the road the shortest.

If there is one steep hill in a long, level road, that one hill is the measure of the load the team hauls along the level stretches. Sometimes it pays to make the hills all in one direction. If the grade favors the traffic, so much the better. That is a point to be remembered in finding a place for a barn. If it is down hill from the fields to it, hay, corn, potatoes, etc., will come in much easier than if the fields are low and the barn high. In dead-level countries these remarks do not have much meaning, and yet in rolling-prairie countries it does not seem altogether the best thing to have the storage barns on the highest part of the highest swell.

In opening a new road to a market town, it is worth while to make every effort to have the grades as perfect as possible. A road opened in Vermont some ten years ago has probably saved the farmers along its ten-mile length forty per cent on the cost of hauling all their freight. It did away with several long, steep hills, besides several short, sharp pulls, which strained every loaded team severely. It is more important to be able to take a large load easily than to have a road shortened by a mile or so. The wise surveyor, therefore, pays as much attention to his grade as his distance. This is a good rule in laying out a farm road.

In the East and North the question of snow and mud must always be an important modifier of all road plans. Will the road be always drifted full from fence to fence? Is it worth the trouble to have only a summer road? In the spring, will this piece of road be a quagmire six weeks after all the other part is dry and dusty? A good grade would not pay for such an awful mistake.

If there is money to make a good road, the first thing to be done is to drain it. The second thing is to drain it, and then it is time to consider road-making. If well drained and well made, a road need not be very wide. Keep its foundation dry, and the hard surface needs to be only wide enough for teams to pass. If the track is good, a very narrow one will answer every purpose.

Cost of repairs is a subject not often thought of. Go and look at the nearest steep hill on a country road, and consider how much it would cost to put it in good condition after a hard rain. All the stones in the country will come out in the middle of the road down the hill, if you only give them time. It may not be actually true, but appearances are in favor of the statement. The same rain will not do any damage worth speaking of to the properly drained road with a level grade.

"But ours is a very hilly country." Railroad engineers have come to the conclusion that they can cross any of the ordinary ranges of mountains in this country without exceeding eighty-five or ninety feet to the mile. If they can get over a mountain chain with three inches per rod, it ought to be tolerably easy to lay out farm or town roads, with grades of less than one foot per rod. These will be practically level. There are no farming lands set so

nearly on edge as to make steep grades necessary. Good roads are in general worth more to farmers than the railways. With poor roads, it may cost more to get the farm products to the station than from the station to the market. In the thickly-settled parts of the country the railroad is of small importance as compared with a first-class road and the diminished wear and tear of team, harness, and wagon. But, before attempting to make an old road good in other ways, it is best to see that the grades are made right.

SELF-PROTECTION FOR FARMERS.

FRANK L. WELLS, ALABAMA.

The Farmers' Alliance is daily growing stronger in Alabama, and most of the counties are now supporting large and active local organizations. That the Alliances are doing much good is undoubted, but the farmers of this State feel that an improvement could be made in the objects and aims of this movement.

There are two results desired: better farming and better markets. The first of these can be attained, it is believed, under the Alliance as at present conducted. The second object is more doubtful. The Farmers' Alliance establishes stores and has the farmer become in effect a merchant, supplying himself with goods at wholesale prices. After paying the expenses of running the store, the net average saving is about ten per cent, or $50 is saved on a yearly expense of $500. But the market of the farmer is unchanged, and in many places it is injured by other merchants becoming jealous of the Alliance store and refusing to handle grain and produce, except at ruinously low prices. What the farmer of the South most needs is to control his own market.

The merchant buys his goods at certain prices, and he fixes the price at which he will sell. The farmer raises grain which costs him a certain price to produce, but he has nothing to do with naming the price at which he will sell. This is done by the grain or produce buyer. This is, to some extent, the fault of the farmer, who usually does not know what his grain costs him. A manufacturer of plows knows to the fraction of a cent what a single plow costs him, including its proportion of interest on his investment and taxes upon his property.

If a farmer should be asked what his wheat cost him, what his corn cost him, what his hogs cost him, and what his cattle cost him, including labor, incidentals, interest, and taxes, he would find it impossible to tell. Hence, he is at the mercy of those who control the markets, because of his ignorance of the most important item in any business—first cost. It is necessary that the farmers should combine for their mutual protection. The only question is as to form of combination. The cost of corn, wheat, or oats could be determined by averaging the entire crop of a district, and the farmers who produce all of these articles are certainly strong enough to control the market in them, if properly organized. What is needed is a combination of farmers that will keep produce off the market unless a price is paid that will afford a living profit, and, if necessary, a like provision to that which obtains in labor unions and associations as to support of members in case of strike could obtain here in case of those who were not in a condition to hold their produce, although, of course, the identical rules could not be made to apply. Where he now saves dollars by buying his supplies at a reduced price, he would then make hundreds of dollars by controlling his own market and affixing his own prices.

While the grain manipulators would be strong, yet the market quotations do not necessarily control the markets. If the farmer goes to a merchant for flour, does he consult the market reports to see what he will pay the merchant for the flour? He certainly does not. And the same would soon be true as to the farmer with his wheat.

Cheap freight rates is another desirable thing, but that would be the shipper's fight if the farmer simply had nerve enough to control his own prices. If the Alliance will have its members combine to control their own produce, they need pay no attention to merchandising or railroading. They can devote their entire attention to farming, and be the most independent set of men on earth.

Thinning out Plants.—One of the great and most frequent mistakes made by gardeners is to delay the thinning out of plants too long. Instead of leaving this work until the plants have made a second or third pair of leaves, the thinning out should be done as soon as the plants are nicely up, and before the true roots of the plants are formed. If done early, the plants that are removed will not disturb the remaining ones, as the first root is perfectly smooth, while, if left until it is a mass of fibrous roots, it will disturb all the adjoining plants, so that growth is checked, and, in many instances, to such a degree that the plant never recovers its full vigor. This is particularly true with root crops; and "fingered" carrots and parsnips can be attributed to this more than any other cause.

THE RAMIE INDUSTRY.

FELIX FREMEREY, TEXAS.

The culture of Ramie in the Southern States has not made headway. Not a single fifty-acre patch of Ramie can be discovered all over the South, although soil and climate are most congenial to this plant in the Gulf States, in Georgia, both Carolinas, Tennessee, Arkansas, New Mexico, and California. All trials made for years, either under the auspicies of the Agricultural Department or by private initiative, have conclusively proven that this plant can be raised to advantage all over the South.

For more than fifteen years it was, in European textile circles, a secret how Ramie could be, and was, spun in woolen-mills without expensive changes. This having a short time since found its way into the Massachusetts factories, it is to be supposed that the innovation will give a great impetus to the textile industry of this country. The impulse, having been given, will bring into prominence Ramie culture in this country, and any one sufficiently acquainted with the fact that this staple can be grown much cheaper than cotton,—never failing to yield four crops per annum, between the twenty-fifth and thirty-second degrees of latitude, and three fair crops between the thirty-second and thirty-seventh degrees,—will not be surprised at the prediction that in the beginning of the twentieth century the United States will have at least one million of acres in Ramie culture.

In the Southern sections of France, also in several of her colonies,—Algiers, Cochin China, etc.,—Ramie culture has attained large proportions. In Spain, Italy, Asia Minor, Egypt and Caucasia, Ramie culture has gained a strong footing, as well as in Anam, Siam, the Straits settlements, and British India. The products of these countries are mostly sent to London, England, the chief market for these and similar fibers. China has always been, and is yet, the largest producer of Ramie. Her export in this article to England, France, and Germany is fair to reach the amount of five hundred million pounds per year. The culture of Ramie in Japan has been quite extensive for centuries. But she does not export any of her crude material. The textile industry, which in the year 1660 was started at Tokio, retains the entire product for manufacturing those elegant grass cloths which, by the natives, are as highly esteemed as silk goods, on account of their freshness, gloss, durability, and the brilliancy of their colors.

On this hemisphere, Mexico, Venezuela, and the Sandwich Islands have taken the lead in the culture of Ramie. Mexico is proposing to make heavy efforts to mantain the lead among the American nations. Not long since a considerable society was formed, the "Compania Mexicana Agricola y Industrial del Ramie," which is presided over by the Secretary of Agriculture of Mexico, Senor Carlos Pacheco.

At Caracas the "Compania Italo Venezolano del Ramio" was organized a few years ago. Its superintendent, M. Jean Anselmo, on the occasion of the Paris exhibition, before the Italian Chamber of Commerce of that metropolis, read a paper in regard to the progress of said company, in which he stated that the State of Venezuela has made them a donation of two thousand five hundred acres of virgin, irrigated, and irrigable land, on which the Ramie culture has begun; also on another plantation of five hundred acres, where one hundred and twenty-five acres are already under culture.

In the Argentine Republic the culture of this plant has been tested on a quite extensive scale, and satisfactory results have been obtained. There is much activity in developing the industry there, as also in Uruguay, Chili, Peru, and Guatemala. In Brazil we find some plantations in the proximity of St. Paul; the plant growing to perfection.

All over the Southern countries of the globe the progress in cultivating Ramie is noticeable. The United States in this respect is behind her neighbors, although she is in possession of some six or seven decorticating machines, built on different principles, which need by no means stand aside when French appliances should offer competition. The near future will justify my prediction, and the formation of the great "Ramie Company of America," at Philadelphia, with a capital of one million dollars, shows that American enterprise has not completely died out as yet.

PROFITABLE TRUCK-FARMING.

SAMUEL CUSHMAN.

The most extensive market-garden operations in New England are carried on by James A. Budlong & Son, of Cranston, R. I. The products of the Budlong farm—early garden-stuff and pickles—have long been famous in the State for both quality and quantity. The farm at present comprises 475 acres owned, and 200 leased, or 675 acres under cultivation. On it are nineteen dwelling-houses, besides barns, shops, sheds, pickle-houses, and many other buildings. In winter, the pay-roll has a list of a little over 100 men, and in summer 160 men and from twenty to 150 women and children are employed, and 900 barrels of cucumbers for pickles are sometimes picked in one day. The manure from 800 to 1,200 horses is engaged at the stables in Providence, and a four-horse team is constantly employed through the year to cart it to the farm. In Boston, the manure from 2,872 horses is secured, and three men and teams are employed to cart and ship it. During the summer, from forty to fifty carloads are received at the farm each week. Part of this, however, is sold to neighboring cultivators. It is unloaded from side tracks, the farm being provided with three, each on a different line of railroad; thus the different sections of the farm are accommodated. Fifty horses and five yokes of oxen are kept in all. In the manufacture of pickles, vinegar is used at the rate of seventy-five barrels per week, which is bought in thousand-barrel lots. The pickles sold amount to about $70,000 per year, making about half of the annual aggregate sales from the farm. In 1887 $133,090.21, in 1888 $133,611.73, was received for the products of the place, and in 1889 the sales, up to November 16th, had reached $133,000. Mr. Budlong has not been assisted by a heavy bank account, or the income from another business, to carry on his operations, but has made them remunerative as he went along. Mr. Budlong commenced by working on the farm for his father, who was a market-gardener. Not until of age was he paid monthly wages. In 1850, when twenty-seven, he hired the homestead farm and started for himself. He was the first gardener to ship vegetables out of the State. The first year of the lease he cleared $1,800, and the last $5,000. In 1856, he bought sixty acres of his present farm, and has added to it from time to time until he and his sons together own 475 acres. In 1858, a market was found in Boston for an overstock of peas, and regular shipments to that city have since been made. A while after a regular market was secured in Worcester, and in 1875 a continuous market was sought in New York. The first crop of pickles was 275 barrels; three years later, 800; in four years, 1,000; in fifteen years, 4,000 barrels, and in 1886, 10,000 barrels. Small cucumbers, grown especially for the purpose, are used for pickles, and this crop is grown in the fields. The work under glass was started by the son, Frank L. Budlong.

The water-tower, thirty feet in height, is centrally located on the highest point of the home-farm. At the top is a tank twelve feet in diameter, having ten-foot staves. Water is forced to it by a steam-pump in the boiler-house, some distance away. Each string of hot-beds has 200 three by six-foot sash, the frame-work of which is made of two-inch plank. South of each string is a passage for teams, and here are bedded below reach of frost the pipes from which the beds are supplied with water. At convenient distances apart are hydrants, having their shut-off below frost, so that the water may be left on all winter. These hot-beds are prepared early in the fall by burying one foot of heated horse-manure beneath the soil, the heat from which, with that of the sun, is sufficient to grow one crop. Lettuce is the first crop planted in hot-beds and greenhouses. One crop is grown from the seed in about twelve weeks. It is pricked out, and six weeks later placed six inches apart. Sales of lettuce begin about November 1st, and continue every week during the winter. Later in the winter it must be sown in the greenhouse to secure the proper growth of the young plants. As soon as a crop is removed, another lot of young plants is at once supplied, though after the first crop the old manure must first be replaced by a fresh supply. To save work, this is done in short sections. The soil and the manure of a certain space are thrown out, and the fresh manure put in, then, instead of throwing back the soil that came from it, fresh earth from an adjoining patch of the same length is thrown on to the prepared space, and so on the whole distance, the last piece requiring the earth that came from the first. The third crop is grown without replenishing the manure, as by March 1st the sun is so warm that it makes up for the diminishing heat of the manure, and one lot grows the second and third crops. Part of the hot-beds and all the greenhouses are supplied with steam, which is forced through the vast net-work of pipes required at a high pressure, from five to forty pounds being carried; the average being twenty pounds. The pipes in the hot-beds are buried in the soil, and it was expected this would serve in place of manure; but it was not a complete success; the manure is still used, with the steam as an aid. Three of the greenhouses are 300 feet long, and one 500 feet. They are supplied with steam-pipes buried in the soil, as well as others carried overhead. Hot water was previously used for heating, but has been discarded.

By the time lettuce ceases to be a paying crop, it is followed by cucumbers, which are ready for the market about April 1st. A large kind is grown for the purpose. When the cucumbers are commencing to bloom, a hive of bees is placed in each house to fertilize the blossoms. When the windows are opened, and wind and insects carry the pollen, part of a crop would be secured; but Mr. Budlong says he would as soon think of raising cucumbers in a closed greenhouse without water or manure as without bees.

The outdoor work commences with winter spinach. This is sold in March, April, and May, the best market being from April 20th to May 20th. The ground on which spinach is grown is given from twenty to thirty cords of manure per acre every year. Late in the fall, a certain amount of spinach is pulled, and, like cabbage, is exposed until it freezes a little, and is then shut up and kept frozen, if possible. This is marketed as needed during the winter. In the spring, asparagus follows spinach, while in turn come summer-lettuce, peas, beans, cucumbers, etc.

In the various houses and sheds there are fifty-four pickling vats, made of cement, holding 100 barrels each, and twenty-two tubs holding 1,000 barrels each, the latter being sixteen feet in diameter, with seven-foot staves. A plug in the bottom of each tub when removed allows the spent liquid to escape into trenches which lead it away. The pickles remain in the brine anywhere from one week to ten months, and are sometimes carried over another year. They are put in vinegar only as fast as needed to fill orders.

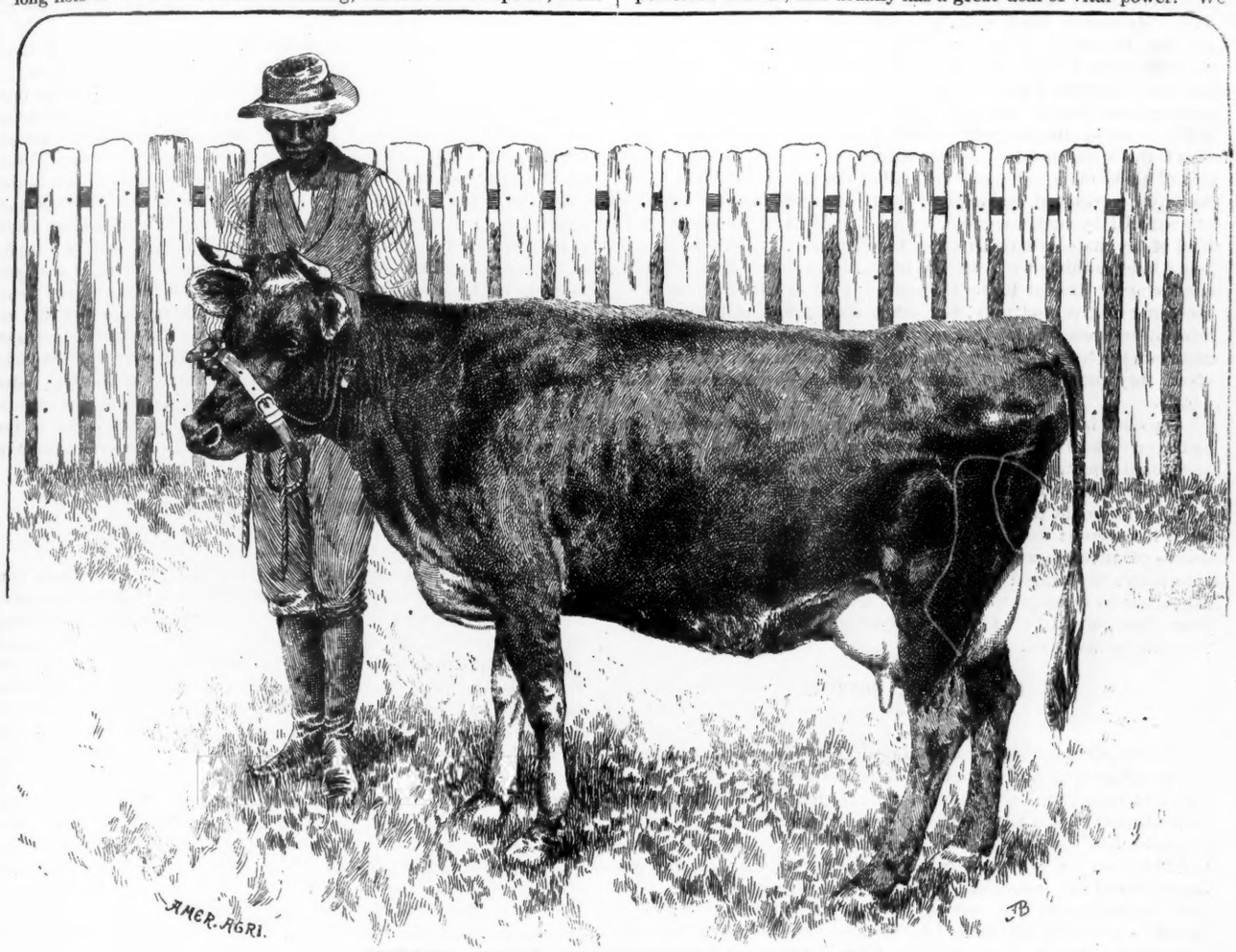
Large crops of turnips are grown, which are stored for the winter in cellars of the vegetable-houses. These cellars are eleven feet deep. The crop is spread on temporary shelves, there being enough room between them for a layer of turnips one foot deep and an inch or two besides, allowing a free circulation of air. The cellars are left open at each end, and all the ventilation given that is possible until there is danger of freezing, to guard against which a close watch is kept, then everything is shut tight to prevent circulation or change of temperature. A part of the boiler-house is used for bottling horse-radish, small onions, etc. Here the piles of roots are cut up, sorted over, and washed and grated by steam. The hot-beds and greenhouses are watered by the pipes from the tanks, and the fields in the vicinity through large iron pipes leading from the steam-pump to them, and to which two lines of hose may be attached, and a large field thoroughly wet in a short time. For watering the remote parts of the land, a fifteen-horse-power portable boiler and a large portable steam-pump are used. They are drawn to the river near the fields, and a stream sent to them through 200 feet of hose.

All vegetables, etc., shipped to market are first carefully washed. For this work are used two troughs about two and one-half feet wide, eight feet long, and two feet deep. A continuous stream of water runs into them, and flows over one side, which is lower, and through the floor. Leaves and grass float over the side, the dirt is carried away by the water, and the coarse sand sinks to the bottom. Thus, a gang of men may work at one all day, and have clean water all the time. With plenty of help, a large order can be filled in as fresh a condition as a small one, and Mr. Budlong says he can pick a crop in the morning when the dew is on, and get it into Boston by express train before the market-gardeners in the near vicinity of the city reach the market with their loads made up the night before.

Pickles are delivered to the stores in the large hardwood tubs so much used for butter, as well as in kegs. Most of the stock is small pickles in clear vinegar, but a part is made up into sweet pickles and mixed pickles, cucumbers, cauliflowers, onions, peppers, etc. The firm have not met with very severe losses from frost or insects. An occasional frost has done considerable damage, and cut-worms have, at times, destroyed acres of stuff, but they now rid the ground of the latter by plowing both in the fall and spring. Ordinarily, the plowing is done in April. Many a crop has been sold at less than it cost to pick it, owing to the state of the market, but hard times affects the consumption of such products less than most goods. Land suited to market-gardening must be near a city, on account of the manure easily obtained and of its convenience to markets. The rise in its value is one of the profits of the business.

JERSEYS IN TENNESSEE.

Middle Tennessee is the home of some of the choicest Jersey cattle in the country. There the rich blue-grass pastures are grazed by the descendants of such noted bulls as Landseer, Marius, Stoke Pogis, Farmer's Boy, Tormentor, and others which have distinguished the Jersey race. The natural advantages of good soil, pure water, and genial climate have contributed largely to building up the fame of Tennessee Jerseys, but far more has been the influence of the breeders themselves. With them the practice has been, and is, to breed to the winners, judging by individual excellence, as shown in the churn, rather than from considerations of family. They have built up herds of great general excellence with individuals which have made almost incredible records. Landseer's Fancy, with a record of 936 pounds 14¾ ounces of butter in a single year, heads the list of Tennessee Jerseys, followed by long lists of cows with records running, without an exception, from fourteen to twenty-three pounds of butter a week. The Jersey is no longer merely "the gentleman's cow," kept as an ornament to the rural or suburban home of wealth, but is recognized as a profitable animal, whose office is to produce cream and butter. They are no longer bred and kept for pastime merely, but as a pleasant, honorable, and profitable occupation. This is applicable not alone to the favored blue-grass region of Tennessee and Kentucky, but equally to all other parts of the country. It is not claimed by the most enthusiastic admirer of the breed that every Jersey cow will yield fourteen pounds of butter per week. But it is safe to count on at least three hundred pounds of butter per year from every cow of an average Jersey herd, with decent food and management. Another strong point in favor of Jersey cattle is their ready adaptability to a wide range of latitude and longitude. They retain their health and vigor equally on the granite hills of New England, the elevated regions of Colorado, in the frigid winters of Canada, the summer heats of the Gulf States, and the soft climate of California. The Jersey is not a local but a general breed. Our illustration is a very accurate portrait of the young Jersey cow Tormentor's Silver, 36058, owned by Dr. William Morrow & Son, Davidson Co., Tenn. She was dropped in 1888, and sired by Tormentor 3533, the sire of twenty-two tested cows. Her grandsire was Khedive 103, a son of the great cow Coomassie 11874, and sire of the greater Princess 2d, whose record of forty-six pounds twelve and one-half ounces of butter in one week stands so far unrivaled. Tormentor's Silver is a silver-gray, with a star in the forehead, and is full sister to Rosy King, the sire of Maquila, whose record is twenty-one pounds and one ounce of butter in one week.



JERSEY COW, TORMENTOR'S SILVER.

COMMON SENSE AND THE BULL.

COL. F. D. CURTIS, NEW YORK.

It is perfectly natural for a bull to fight. His skull is thick, his horns are strong, his neck is tough and stout. He is altogether a powerful animal, and usually has a great deal of vital power. We must take the bull as he is. When young, he can be trained and made a tractable animal, or he can be played with, when he will do things quite cunning for a calf, but more serious and dangerous when older. For these reasons the bull-calf should never be trifled with; his ears should never be pulled, his horns petted, nor his head and neck stroked. If these playful ways are indulged in, they will teach the bull to throw his head around when approached, and make it risky to go near him. The bull-calf should be tied up with a halter, which should go behind his ears and around his nose, and, like the halter of a horse, sure to fasten as well as to lead him. He should be trained to stand aside when any person goes by his side and to step back at the word and remain quiet when groomed or untied. He should be taught to back up, and follow whoever leads him, at a proper distance. A stout ring should be put into his nose while he is not over a year old, and a string should be fastened to this ring six inches long, for a week, to take hold of to turn the ring while the wound is healing. In no case should any one attempt to catch hold of this ring, as the bull will resent it. When the

wound in the cartilage is healed the string should be cut off. To perforate the cartilage for the ring, I use a three-cornered file, and being careful to pull the end of the nose forward so that the file shall not touch the gristle at the end of the bone. Push it through the thin membranes, cutting a slit a full half-inch wide. Through this slit a ring is thrust and then it is joined securely. There is no blood and very little pain.

A bull should never be fastened by the ring, unless it becomes necessary on account of restlessness, and danger of getting loose. Whenever this is the case, he should also be fastened with a very strong strap around his neck, as an extra precaution, and if he is ugly and dangerous, a rope with a slipping noose should also be put about his neck. This rope should be fastened overhead and out of the way. The object of this security is that if the bull does get loose, he will be choked down. If bulls are thoroughly broken and trained when young, and properly fed, they will rarely be wantonly vicious. They should be broken or trained to obey like an ox. The bull is capable of doing a great deal of work and should be made to do it. He may be worked singly or with a near ox. When the bull has been trained to be led by a halter, to back up at the word, and to stand around, he is more than half broken for use in the yoke. The bull can expend his energies in work, rather than in bellowing, pawing, and making day and night hideous with his roaring. He will be a better sire and more active, besides not being dangerous. This is the safest and best way to manage a bull, and to reduce the cost of his keeping. A pure-bred bull of the most costly kind is the better for working in a team, and the risks of accident and trouble are reduced by such care and labor. The bull will soon become fond of his mate and really enjoy his company. A bull is a social being, and nothing tends to develop ugliness more than solitary confinement. One at Kirby Homestead, kept in a back stable, was becoming restive and ugly, but, when moved to a stable with his head by an open window, where he could see every one going to and from the barn,—the dog, the children, the horses, and the cows when they passed to and from the pasture,—became quiet and gentle.

Another bull, which had broken his leg when a yearling and had been cared for by my wife, would call to her when he saw her and would come across the field to lick salt from her hand. Another, fed at her hand, when young, with apples or salt, never forgot his friend, and would turn as far as possible to look, and even recognized her step as well as her voice. Notwithstanding these evidences of affection and gratitude, a bull is not to be trusted. No animal can be enraged so easily, and when one is enraged it is dangerous to attempt to drive him or to handle him. At such times they should be let alone, and when the excitement is over they can be managed.

FEEDING FOR BUTTER.

HENRY STEWART.

One by one the scientific authorities are helping to put a quietus on the misleading and injurious statement that the proportion of butter in milk can not be increased by feeding. It is strange that such a heresy should have obtained currency among those to whom dairymen look for instruction. The writer, led by long experience to differ from the prevalent belief, has singly fought the error and has sustained the opposition to it alone for some years past. And now the professors are coming to the rescue, one by one, and already a powerful influence for the good of dairymen is exerted to encourage them to feed skillfully for increasing the fat solids in the milk. First, the Wisconsin Experiment Station, in a bulletin, declared that by suitable feeding the proportion of butter fats in milk may be increased; then Prof. Phelps, of the Connecticut Station, and now Prof. Caldwell, of the New York Station, follow in making the same statement. Eight or ten years ago I gave a detailed account of the effects of various foods in this direction, observed through a whole year's experimental feeding, which has been reprinted in the "American Dairyman's Manual," and which shows how various foods, rich in oil, tend to increase the proportionate quantity of the butter in milk, and how they also affect the quality. This last effect has been recently noted by the chemist of the agricultural department at Washington, and reported in a bulletin, and this is exceedingly noteworthy as showing the importance of choosing those foods whose fat will not deteriorate the quality of the butter.

This point may be worthy of some explanation. For some years past physicians have known that fats in food or in medicinal preparations, when taken into the stomach, are not digested, but are mixed with the digestive fluids in the form of an emulsion, precisely in a similar manner to the mixture of the fat globules in cream, and that this emulsion is absorbed without change by the villi of the intestines, which are very fine tubes, set so closely together as to leave the appearance of the pile of velvet, and whose office is to absorb the nutriment and pass it into the thoracic duct, the large vessel which is found passing along the spinal column and close to it, and which conveys the nutriment directly into the blood, so that the minute globules of fat in the food thus pass directly into the blood, by which they are distributed to the various parts of the body, and of course to the minute glands of which the milk is formed. And when this glandular substance is broken down to form the milk, these same particles of fat are let loose and escape into the milk and form the butter.

Thus, tracing the fat in the food in which it exists in the form of minute drops or globules in the cells which make up the tissue of plants or grains, we can follow it directly into the milk, without change; and thus are able to account for the effects on the milk of the various kinds of foods given.

This knowledge is of fundamental importance to the butter-maker, and the whole subject is worthy of the most careful study. It relates too to the varying ability of the cows to extract the fats from the food, for cows vary very much in this respect, and some can healthfully dispose of twice or three times as much fat as others, and some, as in the case of the Jersey cow Princess the Second, may be able to actually convert seven pounds of fats in the foods into butter in one day. This is a physiological function and ability, and is thus to be inherited and conveyed by breeding, while it is excited and encouraged—educated, as it may be said, or led out, as the word signifies—by feeding and training. Thus, it may not be right to think or speak of such cows as phenomenal, any more than we should call the extraordinary young horses Axtell or Sunol phenomenal. They are not so at all. They are instances of the result of human power skillfully exerted over the domestic animals, and every one of the numerous examples of this successful exercise of man's dominion over creation should be an incentive to exertions in the same way by every intelligent dairyman in the improvement of his herd, and in his pursuit of success and profit in his business.

SHORTHORNS FOR MILK OR BEEF.

A. B. ALLEN.

The handsomest and most showy form for a Shorthorn cow includes a broad as well as deep chest, full crops, fore ribs so round as to leave no depression behind the shoulders; a straight line along the back to end of the rump; wide between the huckle bones, and well-developed quarters. This is the best shape for making beef. For milk, the chest should be deeper and not so broad, fore ribs rather flat and long, crops less full than for beef, and the quarters quite broad, so that in looking at her in front her body will appear decidedly wedge-shaped, the larger end to the rear. But even thus formed, when dried off, a Shorthorn cow will fatten quickly and cheaply, and make a good carcass of a fine quality of beef. Occasionally one of beef shape,—that is, about as full in front as rear, and rather fat,—proves a great milker of a highly excellent quality, like some Holstein-Friesians. Many of these latter seem to have changed their nature in America, yielding richer milk generally than in Holland, and yet of a very abundant quantity. No doubt this change is owing to the difference of climate and quality of food.

The summers in Holland are cool and wet and in Northern America comparatively hot and dry, with drier and more frosty winters, and the grass of our meadows is less rank and succulent. These have much influence in giving quantity and quality to milk and also in the formation of flesh. Still, the difference in breeds of cattle is paramount, and the animals should be chosen from such as excel in what it is most desired by the breeder to produce.

Silage Under Fire.—A few months since a barn of my neighbor, Charles Taylor, with its contents of hay, straw, and grain, was consumed by fire. In one bay of this barn was a wooden silo, holding about one hundred and twenty-five tons. The wooden shell of the silo was burned completely off, leaving the silage standing. It was found that less than six inches of the surface and sides were spoiled. A new "shell" was put about it as soon as possible. The burned portions were first removed, and the sides again tramped with fresh silage from the surface. It is not expected that the keeping quality of this silage will be as perfect as would have been the case under more favorable conditions. JOHN GOULD, Ohio.

ESSEX SWINE.

There are fashions in pigs, as in clothes. A breed is introduced either by importation or evolution, and, if it takes the popular fancy, maintains its season of popularity and high prices until a newer one appears, and the former takes a permanent place among the standard breeds. These changes are not capricious, save in some fancies regarding color; they are the marks of progressive steps toward something better than the old types. No breed, of any class of live-stock, has ever attained popularity unless it possessed genuine merit. Essex swine have attained a well-deserved popularity, both in England and in the United States. The original type of Essex pig was long, flat-sided, restless, and a great consumer. Lord Western effected a great improvement by crossing upon them the fine-flavored, quick-fattening, Neapolitan swine. These cross-bred pigs were closely interbred until a loss of stamina resulted, when Fisher Hobbes, a tenant of Lord Western, infused new vigor into the breed by crossing the Essex-Neapolitan upon sows of the original stock. The improved Essex achieved great success, and first prizes were awarded to a boar and sow bred by Mr. Hobbes, and exhibited by him at the show of the Royal Agricultural Society in 1840. This gave the breed a great celebrity, and it was afterwards introduced to this country. Here the Essex encountered, in common with other black swine, a strange and unreasonable prejudice against their color. This, however, has been so completely overcome, that white swine are now in a decided minority. The Essex is one of the so-called small breeds. The general appearance is well shown in the accompanying engravings. The color is jet black; hair, fine, rather thin and without bristles. The face is short and dishing; ears fine, soft, erect when young, but incline somewhat with age; carcass of medium length, broad, straight, and deep; bones fine, but strong enough to support the body; hams broad and well let down. They mature early, and are surprisingly easy keepers. In fact, their extreme aptitude to fatten is at once the characteristic merit and the greatest drawback of the breed. Under ordinary treatment, no pigs give quicker or larger returns for the food consumed by them than the Essex; but, when kept in confinement and full-fed, the carcasses are too lardy for modern taste, and lack a desirable proportion of lean meat. This tendency to fatten should be counteracted by diet and exercise. As roasting pigs, the sucklings have a flavor which would have delighted the soul of "Elia." They are good grazers, and should have unrestricted run of pasturage, and very little, if any, corn or other fattening food, save to finish them off for the last few weeks before slaughter.

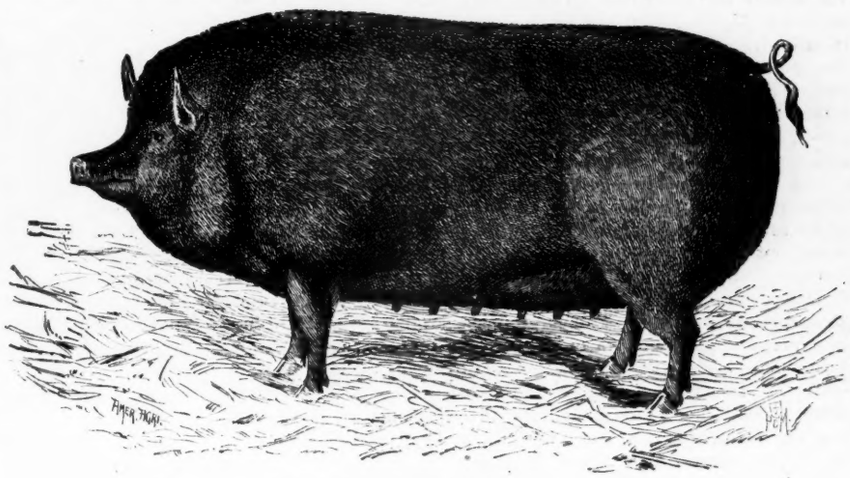


FIG. 1. PURE-BRED ESSEX SOW.

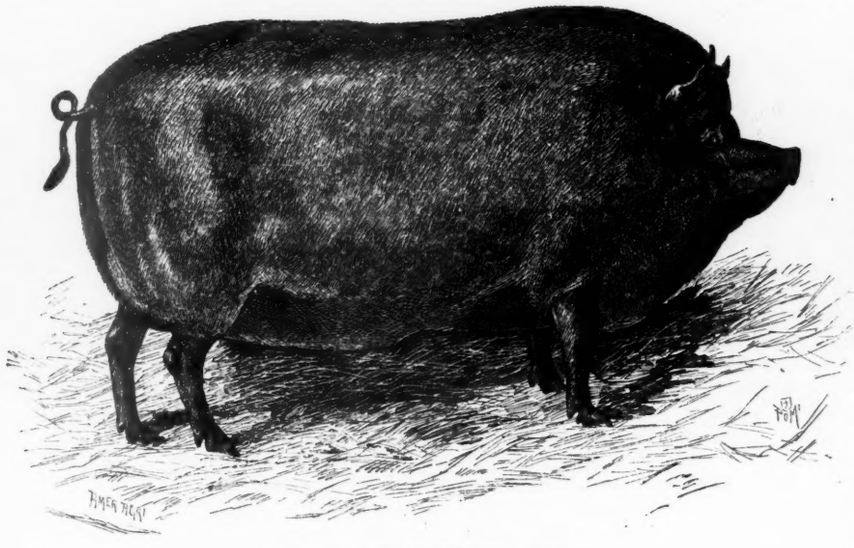


FIG. 2. PURE-BRED ESSEX BOAR.

There has been an increasing inquiry for Essex swine during the past winter and spring, especially in the West and South. Prominent breeders find it difficult to supply the demand. Several animals of high merit have lately been imported, and the herds exhibited at the various fairs, last year, were excellent specimens of the breed. Fig. 1 shows a sow one year old and Fig. 2 a three-years' old boar.

The American Essex Association is composed of leading breeders of Essex swine, organized for the purpose of maintaining the purity and advancing the interests of the breed. The present officers are as follows: President, W. J. Neely, Ottawa, Ill.; vice-president, Frank Wilson, Jackson, Mich.; secretary, W. M. Wiley, New Augusta, Ind.; treasurer, Abraham Reid, Jackson, Mich.; directors, E. T. Doney, Jackson, Mich., R. C. Green, Winchester, Ind., J. M. Bennett, Hebron, Neb., Thomas Taylor, Waynesville, Ill., Patrick Millet, Fowlerville, Mich. The association is in a flourishing condition, having a membership in seven States and Canada.

FOOD AND CARE OF YOUNG PIGS.

GEORGE E. NEWELL, NEW YORK.

In the East we do not have access to cribs of cheap corn, such as our Western brothers are favored with for the pork production, so we are forced to study a more economical way of producing this standard meat. I am strongly in favor of every Eastern farmer raising his own pork, but I want to see it accomplished on a paying basis. If two-thirds of the farmers outside of the corn belt, who raise hogs for family use, would figure out the actual cost of their home-fed pork, they would find that it far exceeded the moneyed worth of the commodity in their local markets. The principal causes are slow development of the growing shoat, and the final cost of fattening it. We must make the shoat grow faster, and fatten it at a nominal outlay. First, pigs should not be taken from their dam too young; they should suckle her until they are at least six weeks old; the sow in the meantime to be fed a hearty ration of milk-producing food. Before they are weaned, the young pigs will learn to feed in the trough with their mother, and, at six or seven weeks of age, they are capable of maintaining a thriving state independently of her. At this stage of their growth, pigs are very easily stunted, and they need a liberal, nourishing diet, as a natural substitute for the milk of their dam. The males should be castrated before they are weaned, and no setback in their growth is then liable to result. Whether the time of year be cold or warm, the pigs should always be furnished with dry, comfortable quarters, under shelter, and a straw nest. Nothing goes further to promote healthy and vigorous growth of bone and muscle than a free run on good pasture. Yet this fact is still ignored by thousands of farmers, especially in the older States.

But what we are most interested in is to promote rapid growth

on a cheap diet. There are very few dairy farmers who utilize for their swine more than half of the nutriment contained in the sour milk, buttermilk, and whey from their dairy. This swill is generally fed in irregular quantities; it is often given too sour; it is poured into unclean troughs, to be guzzled down with a certain amount of filth; and it is not fed in connection with solid food. All of these conditions rob the cheap and valuable swill from the dairy of its real worth, and pigs will gain very slowly upon it. Waste milk and whey cost no immediate outlay; if they are not utilized as pig-feed they will be thrown away. Do not feed whey in excessive quantities; do not feed it at all when it is very sour. Buttermilk may be mixed with the whey before feeding. A clear diet of buttermilk has a tendency to make the pigs costive, and retard their growth. Keep all of this swill clean. Feed it in a sweet, wholesome trough, while fresh. If it gets old, throw it away rather than offer it to hogs.

In connection with the dairy waste, feed a small quantity of either corn-meal, ground barley, or ground peas. As to the limit of the meal ration, regulate this by the apparent thrift of the animals; but a very small quantity added to nutritious swill is enough to make them develop as fast as Nature will allow. If they begin to fatten, diminish the grain, and give them a more extended run. Remember that hogs are grazing animals, so give them bright hay in winter and the run of a clover-yard in summer. By all means keep them out of the mire; allow no filth-holes to exist in their quarters. In summer, furnish them with a troughful of clean water at least once a day. Starting with spring pigs, there is no reason why farmers may not, at a low cost, make of them large shoats for fall fattening. A pig which has had a natural, healthy growth all summer, is, without extra feeding, partially fattened by fall.

TANNING HEAVY HIDES.

N. R. BRIGGS.

Tanning and finishing heavy hides for leather involves considerably more labor, time and patience than are involved in the process given in the AMERICAN AGRICULTURIST for August, 1889, which was intended only for light skins and furs. However, the amateur need entertain no doubts as to his success in taking another step forward, if he will but carefully follow the directions here given. For converting hides into leather, first soak about twelve hours in the following solution: Four gallons cold, soft water, one half-pint of soft-soap, and one-half ounce of borax; if the hides have not been salted, add one-half pint of salt.

To Remove the Hair.—After soaking, remove the hides to the following: Five gallons cold, soft water, four quarts of slaked lime, four quarts hard-wood ashes, four ounces or a small handful of thoroughly dried hen-manure. Leave them in this liquor from one to three days, handling once in a while to see if the hair slips off easily. Then remove to the fleshing-beam and scrape off the hair, also every particle of fleshy or fatty substance from the flesh side, with the fleshing-knife; wash thoroughly in cold water, remove to the fleshing-beam again, and with the knife scrape from both sides all surplus water. Split all hides down the back to facilitate handling. They are then ready to be put in the following liquor for tanning:

The Tanning Liquor.—To eight quarts of cold, soft water, add one quarter of a pound of pulverized oxalic acid, one quart common salt, three-quarters of a pound of *terra japonica*, previously dissolved in water. Do not stint the quantity of this liquor, but make enough to thoroughly cover the hides. Turn the hides over occasionally, letting them remain from two to ten days, according to thickness.

Finishing.—After removing from the tanning liquor, wash again thoroughly, and scour upon the table with a steel or stone. The hide must be well washed and scoured upon the grain side (the side the hair was taken off) if that is to be blacked; for the acid in the tanning liquor from which the hide has just been taken kills the coloring material in the grain black. Hang in the shade to dry. When half dried take the hide down and handle on a table, stretching it; then apply a coating of the following waterproof stuffing:

Waterproof Stuffing.—One pint rye or wheat flour, four ounces bees-wax, three ounces each of pine-pitch and bayberry gum, two pounds beef tallow; melt together over a slow fire; add one quart neat's-foot oil, one quart boiled linseed oil. Take from the fire and mix in one-half pint of alcohol; stir it until cooled. If a polish is required, as for boot or harness leather, soak four ounces of gum tragacanth in water, to which add one-half ounce of lamp-black. When fully dissolved, stir it into the waterproof stuffing, while the latter is cooling. It is better to have the leather damp when the stuffing is applied. When it has been thoroughly rubbed in, hang the hide in the shade until dry; then whiten or sleek upon a smooth table, and bowl until soft. If the grain side is to be blacked, it should be treated with the following:

Grain Blacking.—Take two ounces *terra japonica*, one half-ounce extract of logwood, one ounce of copperas, one quart urine; simmer together over a slow fire. Before applying the blacking, sponge the grain side of the leather with stale urine, then sleek it off with a stone, or even the back of the fleshing-knife, using care not to cut the hide. Repeat the operation; then apply the blacking, while warm, with a very stiff brush,—a shoe-brush will serve very well,—rubbing it thoroughly in. If it does not produce a beautiful black readily, apply a light coat of soft-soap, rubbing it smartly with the hands, then immediately apply a light coating of the following:

Glove Leather Liquid.—One pint soft-soap, one pint neat's-foot oil, one half-pint alcohol. Hang in a warm room to dry; when about dry, apply a light coat of waterproof stuffing, rubbing it well into the leather; then, if a polish is desired, apply the gum tragacanth melted, as mentioned under the head of waterproof stuffing, and again hang up to dry. Polish with a glass sleek, or other hard substance. The smoother the substance and pressure put on, the better the polish. In large tanneries the polishing is done by machinery; a piece of glass, three-quarters to an inch thick and six inches long, is used under a pressure of from five hundred to eight hundred pounds.

THE CABBAGE-WORM AND ITS PARASITE.

WALTER A. LYNN, IOWA.

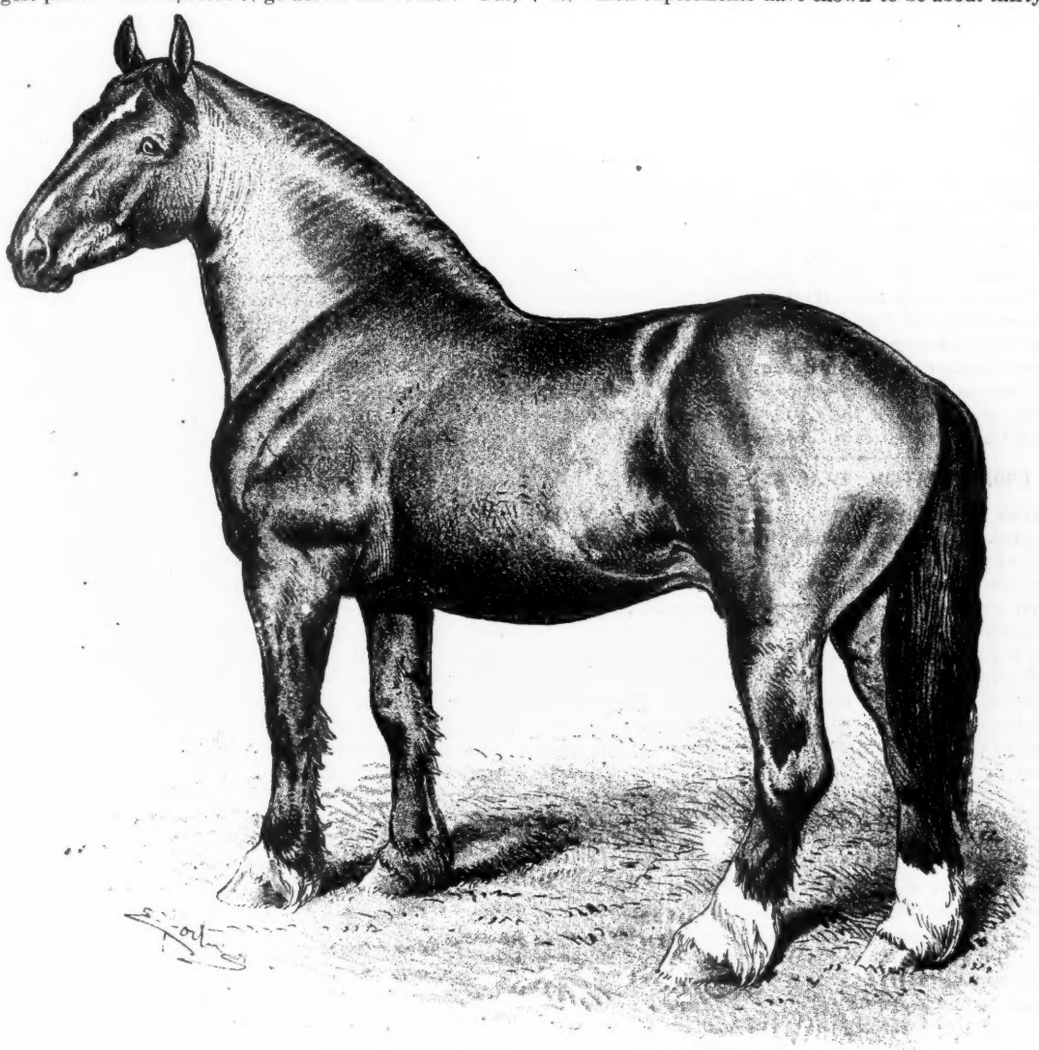
The gradual decrease of the imported cabbage-worm (*Pieris rapæ*), during the last several years, changed last year to an enormous increase—at least in Central Iowa. The decrease was attributed to its many insect enemies. Last year the butterflies hovered over the cabbage patches in swarms and were so plentiful that eggs were deposited on many allied plants, as turnip, radish, wild mustard, etc. Hand-picking the worms and trapping the butterflies, which have been practicable during the last few years, were out of the question where the patches were large. In our patch, containing only about half a hundred plants, we picked 8,000 worms and eggs, and then gave up in despair. In a few days after resigning the cabbages to their fate, we noticed that the long-looked-for parasites had arrived, and, as if to make up for their tardiness, they appeared in great numbers. Scarcely a worm escaped. We killed several which were literally filled with the larvæ of the parasite. Thirty were counted in a single worm. We did not kill many of the worms, as it would only destroy the parasites, and the worms were already doomed. We attribute the unusual amount of cabbage-worms to the mild winter of 1888-89 and the small number—caused by some unknown reason—of the parasitic Hymenopterous flies (*Microgaster glomeratus*). The present year the cabbage-worms will probably be few, unless some disease has attacked our friendly parasites, whose clusters of small yellow cocoons can now be plentifully seen all over the garden, under leaves, etc.

Kerosene Emulsion on Greenhouse Plants.—The aphis can be kept down by fumigation, or the application of sulpho-tobacco soap, and the red spider can be controlled or routed, especially in the greenhouse, where water can be used in any desired quantity, by the persistent use of it all over the plants, and the places where it breeds. But the mealy-bug and the scale succumb to neither of these applications. I have used fir-tree oil with good success, but it is somewhat expensive, and often difficult to obtain. Having used kerosene emulsion in the garden where it proved valuable as an insecticide, it occurred to me that if it was useful there it might also be in the greenhouse. It was applied to oleanders, ivies, lemons, and other plants infested with scale, and to hoyas and other plants on which the mealy-bug had taken up its habitation, and with most satisfactory results. It rid the plants of the insects fought against and did not injure them in the least. I have since applied it to tender plants like the begonia, and, if care is taken, it never injures them, but, if more kerosene is used, some damage will result to delicate foliage. The formula used is: Slightly sour milk, one-third; kerosene, two-thirds. Put in a pail and agitate rapidly, until the two liquids unite and form a white butter. If you have a greenhouse syringe, use it to churn the liquids, and the "butter" will "come" in a short time. Use one part of this emulsion to fourteen parts water. The water and emulsion will mix with a little stirring, and can be syringed over the plants. E. E. REXFORD, Wisconsin.

THE CLYDESDALE STALLION RUFUS 1608 (3.986).

The Clydesdale interest has attained great magnitude and importance in the United States, and is still increasing. The Clydesdales owned in this country will lose nothing by comparison with those which remain on their native heath. Indeed, some of the transatlantic journals complain that the Scottish breeders are beguiled, by the show of "muckle siller," to sell the best of their stock to American purchasers. However that may be, it is certain that, if a Clydesdale achieves distinction in Scotland, there is very likely to be an American breeder ready to buy it, at a large price. At the latest—and, we regret to be compelled to add, the last—International Show in Buffalo, N. Y., a notable feature was the display of Clydesdale horses. Besides the large number of entries by American exhibitors, there were so many fine ones from Canada that the largest prizes were expected to go across the border. But, when the awards came to be announced, it was found that most of the prizes had been won by American exhibitors, and the grand prize of $600 for best Clydesdale stallion, with four of his get, was awarded to Rufus, whose portrait is presented herewith. At the New York State Agricultural Fair, which followed immediately after the International, Rufus took the first prize for Clydesdale stallion, four years old or over, and the grand sweepstakes. The four youngsters of his progeny each took a first prize in its class. The stallion Rufus is owned by Messrs. Smiths, Powell & Lamb, of the Lakeside Farm. He was foaled in Scotland, April 29, 1882; is a bright bay, with a star, and three white feet. He stands sixteen hands high, and weighs, in average breeding condition, about 1,700 pounds. He has unusual quality and finish, fine bone, and great substance. His sire was Corswell (1420), a grandson of the great stallion Prince of Wales. The dam of Rufus was Nanny of Crofts (850), a daughter of the prize-winning stallion Farmer (288). Rufus is recorded in the Clydesdale stud-book of Great Britain and Ireland, his number being (3986), and his American stud-book number 1608.

The Lakeside herd of Holstein-Friesian cattle has long been famous, but the addition of Clydesdale and other horses to the breeding-stock is more recent. At the New York State Fair, where Rufus won his honors, the same exhibitors were also awarded first and second prizes on Clydesdale mares, first and sweepstakes on French Coach stallion Franconi, second on Percheron stallion Nixio, second on Coach stallion Prince d'Or, first on standard-bred stallion De Van, second on two-year-old Seneca Pagan, second on filly Schroeppel Girl, first on yearling road stallion Enchanter Blossom.



THE PRIZE-WINNING CLYDESDALE RUFUS.

Cut Straw for Bedding.—A German agricultural journal presents some cogent arguments in favor of chopped in place of whole straw for animal bedding. The first consideration is the economy of it, which experiments have shown to be about thirty-five per cent. Secondly, the comfort of the animal is better secured. In the use of long straw an even distribution of it will rarely occur, and the animal will be treated to a lumpy couch. Furthermore, it is far easier to separate the wet and soiled portions of a cut-straw bed from the dry. Also, the chopped bedding is a better absorbent of the animal's droppings, and there is less waste of ammonia by evaporation. It is far more easily manipulated in the compost heap. Again, as the absorption of fertilizing material has been more equal in the short bedding material, so the compost heap in turn becomes more uniform and homogeneous—better fortified against external influences and less given to internal fermentation. This is a point of prime importance, as many will attest who have exposed themselves to serious loss in their manure heaps, by burning. Important as is this matter in the stable, it is still more so in the pig-sty. Swine, especially brood sows, should be furnished with cut-straw bedding rather than long straw.

A SIMPLE SAW-MILL.

The sketches and description from which our illustrations were engraved come to us, as have many other ingenious devices, from the antipodes. They were furnished by Mr. James T. Carver, of Queensland, Australia. Fig. 1 shows in horizontal section a method of cutting down a standing tree by the aid of spring-poles. An inch

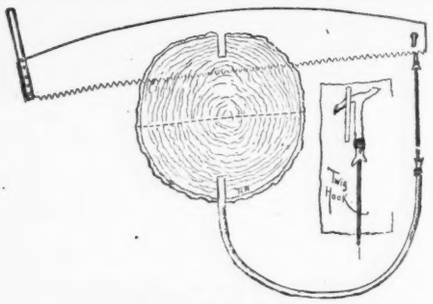


FIG. 1. HORIZONTAL SECTION OF TREE.

hole is bored into one side of the tree directly opposite the point where the saw-cut is to begin. Into this hole is inserted the butt-end of an elastic pole, cut to the proper length. To the tip of the spring-pole is attached a hook cut from a forked branch. This end is then bent around and the hook inserted into the hole in the saw near one end. This spring-pole holds the saw close to the work, and assists in hauling it, as the sawyer, grasping the handle, pushes it from him. When the tree is cut half off the hook is liberated from the saw, and the spring-pole shifted to the opposite side of the tree, where it assists in completing the work.

Fig. 2 shows a similar method of cutting the fallen tree to logs of any desired lengths. In this case two spring-poles are inserted into holes in the upper side of the tree, as the distance from the ground would not admit them on the lower side.

CROP ROTATION, EAST AND WEST.

THE WESTERN NEW YORK SYSTEM.—In western New York the commonly adopted rotation or system is, first, corn and potatoes on sod; second, barley or oats; third, wheat; fourth, clover and timothy for one or two years. The barn-yard manure is usually put on the planting-ground, and the grain crops, if fertilized at all, are dosed with commercial manures.

It is a very convenient rotation, fitting wonderfully well to our range of staple crops and climate, but a very faulty system with which to clean the ground and maintain or increase its fertility. Starting when the soil is supposed to be at its best as regards fertility, the inverted sod and the applied barn-yard manure are used for the planted or hoed crops. The soil is usually supposed to be rich enough after the removal of these crops to produce a good yield of barley or oats, but the wheat, which demands the best chance of any, is really left out in the cold unless a liberal amount of phosphates is used.

A very good rotation is this: First year, clover, plowed down for wheat, and barn-yard manure, applied thin, in the fall, as a top-dressing; second year, wheat; third year, corn and potatoes on wheat stubble; fourth year, barley seeded to clover; fifth year, clover, plowed down again for wheat. In this system, commercial fertilizers should be applied to the barley. Oats may be grown, but they are not so good as barley to seed after. If the clover badly

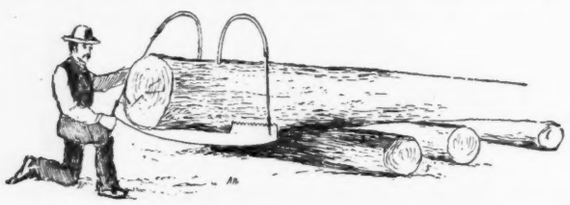


FIG. 2. MODE OF CUTTING FALLEN TREE.

fails (as it will with any crop sometimes), then rye may be sown after the spring grain, and plowed down the following year for wheat. No rotation is satisfactory that will not admit of clover being plowed down and the land cleaned by fallowing one year in its course, and the average farmer should develop as much as possible his home resources for enriching his soil. G. F. WILCOX, New York.

ROTATION IN UTAH.—In this region we do not follow wheat after oats or barley. I always manure for corn, next year plant potatoes, then wheat, and then oats. Oats draw on land more heavily than wheat, and do not leave the necessary plant-food. Besides, there are always some oats left on the stubble, which come up in the wheat, and the crop is not as good a sample of wheat. A little wheat among oats does not hurt them for feed.

My experience is that wheat will do better to succeed potatoes than any other crop. I once saw a piece of wheat where a strip of potatoes had preceded it, then a strip of corn, then a strip of sorghum cane, and lastly one of carrots. There were four distinct qualities of wheat. On the potato land it was fine; next, on the corn ground, a little inferior; that on the cane ground was a good deal poorer, and the part that followed carrots was very poor, with short straw and small heads. I do not know of anything that draws on ground like carrots.

I have experimented a good deal in the last thirty years, and find that I can raise as large a crop and as good a quality of wheat as is raised in any part of the United States. It rarely ever falls below sixty bushels to the acre, and often yields more. I do not find fault with Eastern methods in rotation of crops. Probably my system would not answer at all in the Eastern States; but it certainly does well here. It would be almost useless to sow timothy and clover on most of our land in Utah. It is a dry country; the surface would become parched before the seed started, and irrigation would harden the land. WILLIAM GIBBEY, Utah.

HURDLES FOR SHEEP AND POULTRY.

Our illustrations represent a very cheap and convenient form of portable hurdle for sheep and also one for poultry. The first, shown in Fig. 1, is made of inch boards sixteen feet long and three or four

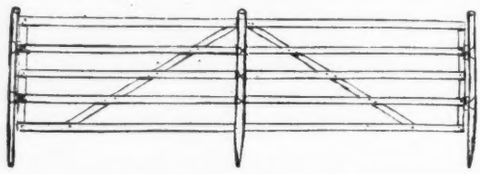


FIG. 1. BOARD HURDLE.

inches wide, nailed at each end to an upright cross-piece of similar width and four feet long. Diagonal braces of the same material are nailed on each panel, as shown in the engraving. When the posts have been driven into the ground where the hurdle is to stand, the panels are carried and fastened to them by light flexible wires. The panels are light and effective. In case the ground is so hard as to render it difficult to drive the posts, the work may be facilitated by the use of a crowbar. Fig. 2 shows a form of movable fence for poultry. It is made of laths nailed to strips of inch boards twelve feet long. It is wired to the stakes like the other.

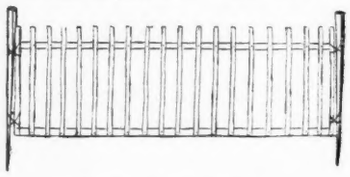


FIG. 2. LATH HURDLE.

Repairing Roads on Hilly Land.—Roads may be repaired at any time, except when they are saturated with water. Drains, either on the surface or under it, are a most effective means of repair. In hilly localities broken stone is most useful for making repairs. Water-bars made of broken stone will be permanent, as they will not be cut through and channels thus made to wash out and damage the work. Culverts paved with broken stone are not washed out, and stay where they are put. The most effective way to use the stone is to lay large pieces where they are to stay and break them there with an eight-pound steel hammer. This pounds the rock together and makes it very solid and firm. A mud-sill of a large saw-mill, set on a foundation of rock thus broken, on very soft ground, has not moved or sunk perceptibly to a level during two years; and for foundations of this kind there is no better material than this.

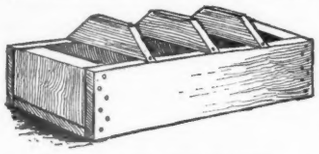
Good Implements in the South.—I think the Thomas an excellent smoothing-harrow. The Clark cutaway harrow is the best pulverizing harrow I have ever seen, as it breaks the land without turning it up and exposing to the sun, which is of great importance, in the South especially. The one-horse Acme harrow can not be beaten for cultivating corn. The foregoing, with Starke's Dixie turning-plow, Dr. J. L. Napier's cotton and corn

cultivator, the Campbell sweep, and the John subsoil plow, are all that are necessary for cultivating oats, corn, and cotton. In fact, they are almost indispensable in successful farming. The Leytch cotton-planter and the Peterkin cotton are the best I have ever seen.

Z. J. DRAKE, Marlborough Co., S. C.

IMPROVED PIG-TROUGH.

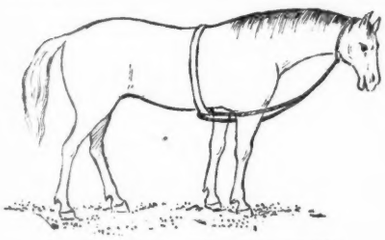
A pig is bound to do three things if he can, and most generally he can, viz.: get his forefeet in the trough when eating, crowd out his fellows, and gnaw the trough. A durable and cheap trough may be made after the plan shown in the illustration, which will circumvent most of the pig's roguery. The bottom is a two-inch plank, ten inches wide; the sides are plank eight inches wide. The end pieces are cut from timber four by six. It is put together with spikes. At distances twelve or fifteen inches apart, pieces, two inches thick by six inches wide, are securely spiked across the top of the trough. The pieces are set on their edge, and the upper corners beveled to permit nailing. These pieces prevent the pig from crowding his neighbors and from getting all four of his feet in it, for they rise so high that he can't stand. To keep him from eating the trough nail thin band-iron on the exposed portions. This trough is easy to clean out with a spade, and the food may be evenly distributed.



SERVICEABLE PIG TROUGH.

TETHERING A BREACHY HORSE.

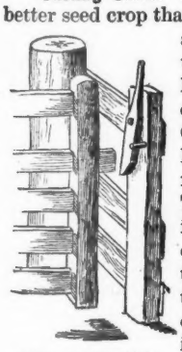
Mr. William Gosnell, of Ontario, Canada, sends us a sketch and description of the method he employs for restraining a breachy horse while at pasture. A rope nine or ten feet long, according to the size of the horse, is knotted around the neck of the horse; one loose end is passed through between the fore legs, under the surcingle, and tied to the other end of the rope, outside of one foreleg. The rope is drawn just short enough to restrain the horse from raising its head higher than the withers. It does not interfere with grazing or drinking, but keeps the head so low that the horse will not try to jump a fence when thus equipped.



TETHER FOR A BREACHY HORSE.

NOVEL GATE-FASTENING.

The fastening illustrated below may be adapted to almost any description of farm-gate; is easily made, and the most sagacious and mischievous horse or cow would find it very difficult to open. The gate-bar next to the top is made so long as to project through the upright, or a special piece may be fastened there for the purpose. A piece of wood ten to fifteen inches long, and shaped as shown in the engraving, is fastened by a bolt or wooden pin to the inside of the post. A second pin is driven into the post. When the gate shuts, the fastener falls into position by its own weight.

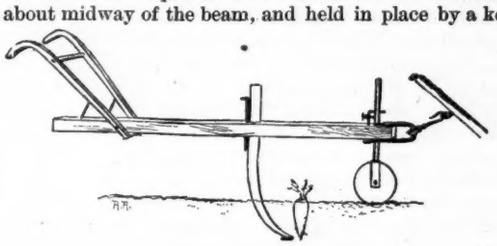


GATE FASTENING.

Cutting Clover Early.—By cutting early for hay we get a much better seed crop than if the cutting is deferred; and clover seed is a profitable product. The price last season was unusually low; but no farm-product brings a low price less frequently. In but few localities does the product much exceed the home demand. Outside of the harvesting and threshing, very little cost is involved in the crop. The haulm is readily converted into an excellent fertilizer. The chances of a seed crop, as well as the crop itself, are increased by early cutting of the first crop; and this would justify early cutting, though the hay was somewhat reduced in value thereby. But early cutting increases, rather than diminishes, the value of the hay crop. The quality of the crop deteriorates very fast after full bloom, and the quantity is usually less on account of the loss of the foliage, and other delicate parts that are the most valuable portions. It should not be forgotten that as cutting is delayed, more of the clover will lodge, especially as it is subject to storms; and when clover is lodged, the parts in contact with or near the ground are rapidly damaged, and soon rendered worthless. Better weather is often had for curing by cutting early; and the sun soon becomes too hot for the best curing—burning out rather than drying out the clover.

HOME-MADE ROOT-LIFTER.

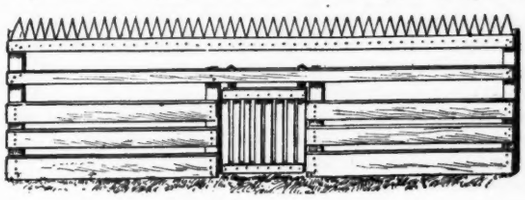
The accompanying engraving is so clear that it scarcely needs explanation. The beam is of hard wood two and a half by three and a half inches, and five feet long, to which the handles are bolted and braced. In front is an inch hole, through which passes a round iron rod, forked at the lower end to hold the wheel, which may be of wood or iron. The upper end of the clevis is turned up, and a threaded hole cut in it, to receive the thumb-screw which holds the wheel-rod in place. The iron lifter is inserted in a mortise about midway of the beam, and held in place by a key, as shown in the engraving. The foot is of five-eighths inch iron, three inches wide, with a small wing of steel riveted to the lower end. The roots to be lifted are first topped, as they stand, with a sharp hoe, throwing two rows of tops into one. This leaves the foot free to work without obstruction.



INEXPENSIVE ROOT-LIFTER.

SWINGING-DOOR FOR HOG-YARD.

A very simple and effective arrangement to protect swine from constant raids of poultry while feeding is shown in the accompanying illustration, from sketch and description furnished by W. A. Graham, Indiana. Pickets are nailed to the top boards of the fence all around the yard or pen. A slatted door, made of light material, is hung by stout screw-eyes, as shown in the engraving. The pigs can pass readily through the door, which closes by its own weight, while it is too heavy for the fowls to move.



SELF-CLOSING DOOR.

Sweet Corn as a Forage Crop.—I planted, on an underlying low piece of ground, one acre of good, middling-large variety of sweet corn, about June 1. After it had obtained its growth, I cut and hauled a load of it each morning to the pasture field, scattering it well over the ground. The stock would pull off the ears first and then the leaves, but, before the next load was given them the following morning, it would all be eaten up clean. I fed fifty head in this way for three weeks from the one acre, there being sixteen spring calves, sixteen yearlings, two year-old steers and heifers, an old bull, and seventeen cows. They gained steadily and appeared to have plenty of food. There had been a continuous drought for weeks, and their pasture afforded them but little feed.

WILLIAM DALE, Hardin Co., Ia.

The Best Breeds of Swine.—Agriculture, like other industries, is passing through a radical change, a change from the roots up, for this is the meaning of the word radical. Consequently, materials, as well as methods, must change. And, as regards the rearing of swine, old breeds which have been kept for years past for the production of clear mess pork—all fat, and thick, heavy fat too—and which is now unsalable except at greatly decreased prices, must now be changed for smaller kinds which grow rapidly, make lean meat, and are always ready to kill.

THE STATUS OF AMERICAN SHEEP-HUSBANDRY.

R. M. BELL, ILLINOIS.

The present depression in the production of wool, commonly called sheep-husbandry, in this country, has been the most peculiar depression the industry has ever experienced. Not that wool has been so extremely low in price, or that it has been below the price of production, for it has not been lower relatively than other farm products; but, by reason of anticipated ruin, flock-masters have been scared to the very verge of abandoning the business. The long-continued scare has had its blessings in the enhanced demand for mutton and the high prices that have prevailed for it—above the price of all other meats. That beef should have been second in price is unexpected and hopeful for the future. In this preference has come a most marvelous awakening to the necessity of a mutton-husbandry, supplementing and in connection with an improved wool production, in greater harmony with and auxiliary to a higher system of agriculture. Thus has come to this country a most hopeful, legitimate, but unexpected timely diversion from the languishing wool industry. No thinking man who has given the subject any thought could fail to see that some time the conditions of American agriculture and civilization would outgrow the raising of sheep for the one product, wool. It had been the experience of the older industrial countries of Europe, but it came to us so slowly that we failed to see the facts when we were confronted by the changes. In contemplating this state of sheep-raising, we had supposed we should directly acquiesce and yield to the inevitable, and raise sheep, with mutton as a first, and wool as a secondary consideration. We had not anticipated being driven to do so by direst necessity. The fact that the high-priced conditions of the New England States had led to the abandoning of wool-growing as a business, and the raising of sheep for mutton, had not occurred to us of the West as any sign that the time would come to us when we should do the same thing. The fact, too, that when former depressions in wool came upon us we had gone towards mutton qualities as a relief from low prices, and, as prices of wool came up, we had returned again to wool, failed to show us that we were unable to grow wool as we once did. Nothing had made us see the changes that were so imperceptibly coming. We did not see that wool-growing belonged to cheap conditions, cheap lands, cheap living, cheap civilization. Now it is plain enough that we can not raise wool as cheaply as can the regions where the conditions are different. When the price of wool was high enough we could; when it became low we failed. We could not raise it cheap enough; that is all that ails the American sheep-husbandry of these times. In the East no such complaints were heard, as in the West, about ruin to sheep-raisers. The State of Ohio occupies a peculiar position on the question. In the past, Ohio has been foremost in loyalty to Merino sheep and the wool product. The value of lands and expensive conditions of Ohio are conspicuously evident to an observing traveler. In its demands for valuable products as the proceeds of agriculture it is not unlike the older States of the Union. The late meeting of the sheep-men at Columbus boldly forecast the situation and future prospects of the sheep industry of the State. It did more than this: it echoed what has been done in the older nations and in the older States of the Union, and the future system of sheep-raising in the progressive agricultural States of the West, where the circumstances favor.

The wool-bearing sheep, once so useful, can still do good service where lands are low in price and, therefore, specially suited to wool. Such conditions need not be looked upon as favorable to the best results in raising the larger English breeds of sheep. Here have come in the causes of disappointment of the past. These sheep—the mutton breeds that have had greatest favor in this country—have no place in the ruder systems of farming. They are the direct products and factors of a better agriculture than they have found in this country. We have given them Merino care, Merino pastures, and expected the same results they gave in England, under a more fitting system of care and feeding. They could not meet the expectations. They had not the means to do so. They were strangers in a strange land, required to make wool and mutton at the same time, under an impoverished husbandry for which they had no affinities. The lack of this knowledge of their capacities and requirements shut them off from rendering the fullest benefits to us, and us from the highest results they were capable of affording. If happily they shall be more intelligently appreciated under a depressed situation, we shall have made a long step towards better farming and better fortunes. The use of rams of these breeds on the common and Merino sheep of this country has been one of the most promising features of the mutton era so auspiciously begun during the last four years. Among Merino-fanciers in the Middle States and the West it has been greatly objected to, as going in the wrong direction. It has been the means, though, by which many a man has escaped disaster and financial defeat. The opposition to cross-bred Merinos has given way largely under the potent acquirement of a cash profit as the experiment to make money out of the flocks during these hard times, when wool would not make ends meet. This Anglicising of Merinos has been so successful in Europe that it seems especially helpful in meeting the requirements of a mutton-and-wool sheep corresponding favorably with the mutton breeds of the British islands on their native lands. In addition to the meat product being so acceptable, the fleeces of these cross-breeds—especially the cross by the English long-wools—have been rivaling the fleeces of the famous French Merinos in working values. The French have shown commendable independence in leaving English ideas and standards as not applicable to their situation and uses, and pursuing the suggestions of nature, which are always so safe in harmonizing animals and soils as copartners and coworkers for man's uses. In this way these *Métis Mérinos*, as the French call the Anglo-Merinos, are being established into types or varieties belonging to and part of the regions to which they belong, and which produced them.

POULTRY PICKINGS.

JOHN W. CAUGHEY, PENNSYLVANIA.

Many beginners wonder why their chickens, which seem to be lively when a few days old, begin to droop and drop off, one by one. Look on top of the head and under their throats, and you will discover the cause—lice. Prevention here is better than cure.

What about that flock of barn-yard fowls? Many flocks hardly keep the farmer's table supplied with eggs and broilers. It is true that pure-bred poultry is the best to keep; a good breed will, under proper management, yield far more in profits than does common stock. They eat no more.

The incubator seems to have a "corner on chickens." It goes to work late in the fall, turning out the living balls of down each month, and by April a lot of broilers are ready, when the old hen is just beginning to get out with her first brood. Four months ahead means handsome profits at top prices.

Broken oyster-shells and bone are both excellent food for hens. As the ingredients of shell-making material are to be had in both, the value of it for hens at any season of the year is certainly apparent. Any restaurant or fish market will be glad to make arrangements to give away what they have; all the expense will be that of removing them.

The abundant rains which generally fall in spring will suggest the necessity of good drainage for the poultry-yard. Dampness is invariably the open door to roup. Fill up all hollow places where filthy water accumulates after a rain. A chicken will see no more harm in drinking impure water than a man would in vile liquors. If the yard is properly kept this will immediately obviate the trouble.

The meadow below the barn is where we advise turning out the fowls, at ten o'clock in the morning, or a little earlier, perhaps. The chickens all like a change of scene. We never permit them out later than noon, at which time they are driven into the coops and given a warm feed of vegetables with a little grain. They are then content to remain within the inclosure of a wire or picket run, and suffer none from the confinement. Wet days we keep them in.

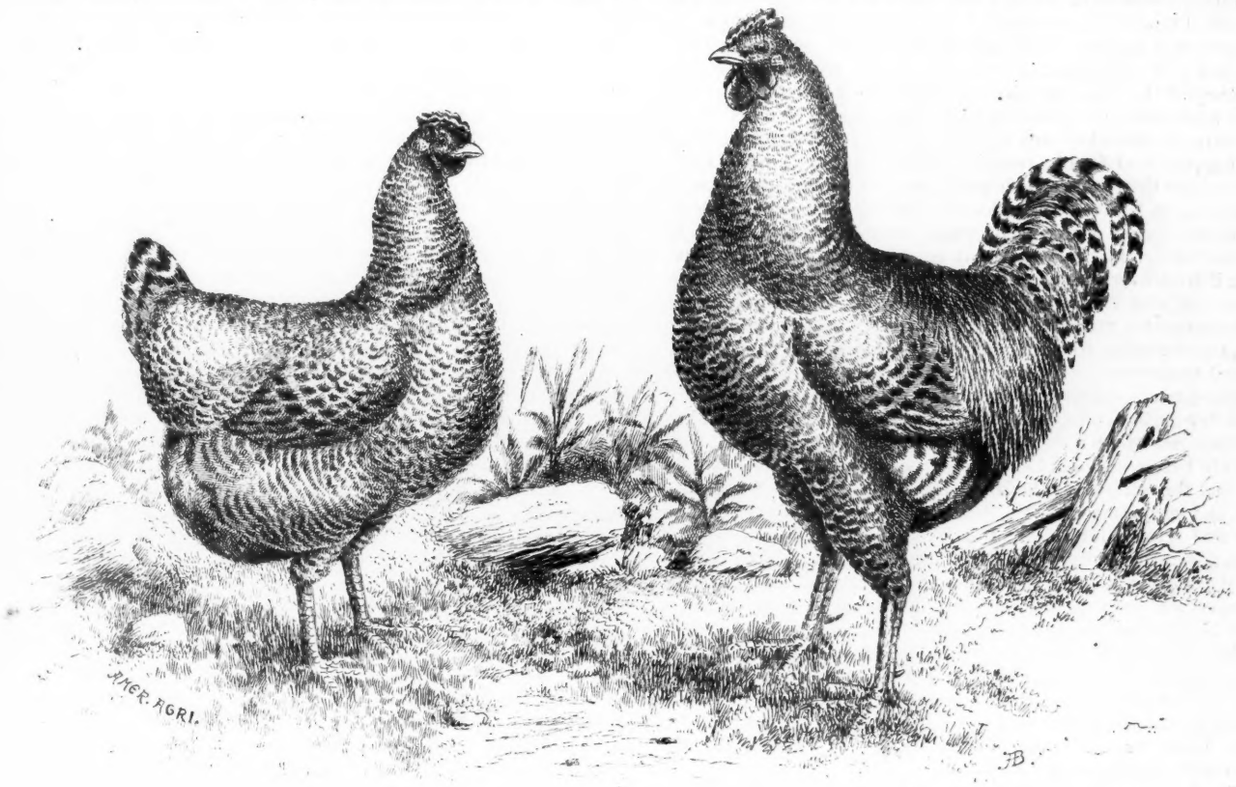
A large, bright-red comb shows a layer. A healthy hen shows her condition by the color of her comb. A purplish-red comb indicates something disordered. One in this condition will lay but little. Her general appearance is stupid; excrement thin and watery. She is a fit subject to take in hand and mend. Place her in a warm clean pen by herself and feed carefully a few days with stimulants. We never do much doctoring; the hatchet is our remedy.

In France the fattening of geese for market is the business of men who do nothing else. They contract with the dealers to get their stock in marketable condition at a certain time for a price agreed upon. France is considered the largest poultry market in the world, the keeping of poultry being done in a manner that makes it pay. It is not uncommon to see the French peasant driving into market a flock of several hundred geese, selling them as we would so many sheep or hogs. There are also many who go among the farmers, pluck the geese feathers, and market them on percentage; this gives employment and a living to many poor people.

PEA-COMB BARRED PLYMOUTH ROCK FOWLS.

The Plymouth Rock is distinctively an American fowl. Its evolution and development were wholly accomplished by American fanciers. The prominent position attained by the breed, not only in this country but also in the some parts of Europe, bears witness to the skill and intelligent enterprise of its originators. But the original Plymouth Rock, as first admitted to the standard, was not in every respect an ideal fowl. The requirements as to comb were: "Bright red, single, fine in texture, rather small, perfectly upright, and straight, with even and fine serrations, and free from side-sprigs." Single combs which come fully up to the standard are rare and difficult to obtain. Uneven serrations and a sidewise wobble are more commonly found than perfection, and in vigorous, well-grown birds, there is a strong tendency to excessive height and coarseness. Worst of all, in those parts of the world where the winter temperature ever sinks down to or below the zero mark, there is great liability to frost-bite. The fowl which goes into winter quarters with a comb which will stand close judging is more than likely to come out in spring with it shorn of its beauty and symmetry by the icy fingers of the frost-king.

For reasons indicated, a rose-comb Plymouth Rock was for a long time the dream of American fanciers. At length it came, not by crossing with pea-combed breeds, but spontaneously as a "sport." It has now become a thoroughly well-established breed, and has been admitted to the Standard of Perfection. The requirements for the pea-comb Plymouth Rock are, in all respects, except the comb, the same as for single comb. For the latter feature, the standard description is for cocks: "Pea, small, firm, and even upon the head, bright red." For hens it is the same, except that it is "very small and low." As remarked above, the breed is generally conceded to be a "sport," though there have been suspicions of a cross with light Brahmas. But it is far more probable, in the absence of any evidence to the contrary, that the pea-comb is the result of "atavism,"—throwing back to some remote Brahma fowl which contributed to the formation of the original breed. Mr. H. S. Babcock, of Rhode Island, a leading breeder of the new variety, says of them: "The Pea-comb Plymouth Rock is not a Dominique colored Brahma, but is a standard Plymouth Rock in all its characteristics. It has the size, shape, color, and qualities, not of the Brahma, but of the Plymouth Rock. As an egg-producer it is the coming fowl. * * If, as we claim, the Pea-comb is practically exempt from injury by frost, it will materially reduce the cost of egg-production and the keeping of fowls; it will enable the fowl to lay in the coldest weather, when eggs are scarce and command a high price."



PAIR OF PEA-COMB BARRED PLYMOUTH ROCKS.

RAISING CHICKS ON THE FARM.

MISS H. C. DUDLEY, KENTUCKY.

The farm is the place to raise chicks; there they can have an abundance of fresh air, a wide range, and an almost unlimited variety of food. Given healthy and vigorous breeding stock, comfortable quarters, and intelligent care for the first two months of their existence, and the chicks will thrive and grow like magic, building up strong, perfect frames, invaluable for the breeding pen or profitable for market purposes.

Every poultry-keeper who studies the wants of his flock with a view to their best good evolves from experience and observation a certain method of feeding and general management, the practice of which is termed "good luck" when successful. As my neighbors say that my luck is remarkably good in raising chicks, I think perhaps a short account of my way may prove helpful to beginners. Last spring I raised fully ninety-five per cent of all the chicks hatched; they were exempt from all disease whatever, and grew so rapidly that many of the pullets began to lay before they were six months of age. No hens were allowed to sit until after the first day of March (the springs are earlier here than farther north). When they began to hatch, as the sitting hens had no protection from those that were laying, we had to remove the chicks as soon as they were dry, to prevent their being crushed. When the number of chicks amounted to fifteen, they were put with one of the sitting hens in a goods-box containing an inch or two of clean, dry, straw. This box was called the nursery, and in it the chicks were kept until they were two days old, to see whether the old hen would mother them, and to let them become attached to her, she being liberally fed and watered to make her contented. The first meal of the chicks was given when they were twenty-four hours old, and consisted of soft egg-bread broken in a pan of sweet milk heated to the boiling point, and then cooled. This food should be stiff, not wet and sloppy. Once a day a pan of sweet milk was put in the coop for a short time and then removed lest the chicks should play in it until they became wet and chilled. Fine gravel and sand should also be kept within reach. When the chicks were two days old they were cooped out

in the yard, but not permitted to run out until a day or two older, and then for a run of only a few hours, the time being lengthened as the chicks grew older and stronger, until at two weeks old they were let out every morning as soon as the dew dried from the grass, and allowed to remain until they showed signs of fatigue in the afternoon. After caring for chickens for a number of years I am persuaded that the death of a great number is caused by overtaxing their strength while quite young. The mother hen, after her long period of incubation, is naturally very hungry for insects and green food, and if not restrained will scarcely pause an instant in her energetic search for them, her tender brood meanwhile trying to keep pace with her till many of them perish from fatigue.

The yard for raising chicks should be dry and sunshiny, a sandy soil containing some gravel being preferable to close, damp clay. They can not thrive in a lot that is much shaded, or on ground covered with rank vegetation or tall thick grasses. The coops for the little ones should be well ventilated, but rain-proof, each accommodated with a floor made separate, so that the coop may be lifted off every day and aired while the floor is thoroughly cleansed.

I found it advisable to keep the chicks upon the bread-and-milk diet until they were a week or ten days old; after that a part of their ration consisted of sound wheat boiled to bursting. This also was cooked until it became a solid mass, as watery soft food is apt to cause bowel diseases. Table scraps, bits of stale bread, scraps of meat, and cold vegetables, either softened with sweet milk or with the richest of the liquor in which the meat was boiled, forms for the chicks wholesome and palatable food. Care should be taken, however, never to offer them any sour or rancid food, and to keep their drinking-pans and feeding-troughs always clean and sweet. Once a day at least their soft food should be seasoned with chopped meat or dripping, and after the chicks are a month old half their daily rations may consist of dry grain, wheat, oats, or cracked corn. At this time buttermilk or clabber may be substituted for sweet milk, giving it fresh every day, so that none shall remain long enough to become very sour. Raw dough, made of corn meal, I consider most unwholesome for young chicks. It swells and ferments in their crops, causing indigestion and frequently death within a few hours. Before I learned better I killed many a one that way. Now, all the food given to my chicks until they are nearly grown is well cooked, except dry grain, which is fed sparingly, for if they are allowed to pack their crops with it the mass swells and ferments like corn meal.

Until two weeks old chicks should be fed four times a day, and after that three times is sufficient. Have regular times for feeding them, and encourage each old hen to take off her brood between times and scratch for them. It is what they find for themselves that makes farm poultry so healthy. Still, in addition to this, a liberal allowance will enable the pullets to develop into early and prolific layers and get the cockerels ready for market. Little chickens should be examined every few days, and, if found to be infested with vermin, rub a tiny bit of pure lard on their heads and under their wings. Anoint the mother hen in the same way, applying the grease to her breasts and thighs also; this should be done in the evening so that the grease may have time to do its work during the night. Clear, warm weather should always be selected, else the chicks will suffer next day from chill.

The best remedy for the gapes is prevention. Protect the chicks from the rain and dew, give them dry quarters at night, and see that all their surroundings are clean and wholesome. Keep them so busy growing that they will have no time to get sick.

EXPERIENCE WITH A CHEAP SILO.

JOHN GOULD, OHIO.

Last year I fitted up, inside of a barn, a silo with a capacity of one hundred tons of corn silage. The entire cost was only forty-three dollars, the lumber used being of cheap quality. Now that it has passed through the practical test, it will be interesting to note its behavior: First, it kept its contents in the most perfect condition. Not a bushel was lost on the sides, corners, or bottom. The cheap lumber, which cost only ten dollars per thousand feet, has proved as good as any costing twenty-four dollars per thousand. The paint, made of two parts gas-tar to one part gasoline, has proved superior to any other I have yet tried, or noticed; and is far better than gas-tar and resin applied hot. The only mistake about the paint was that I did not discover its preservative qualities sooner, and paint all the lumber of the silo on both sides, which would have made it durable beyond question. The silage resting against it six months produced no effect upon it, and it is as glossy now as ever. The concave clay floor was all that could be wished, and is far better than the concrete floor in other silos. By making this floor some fifteen inches lower in the center than at the side walls, the great weight of the silage is thrown into this depression, and relieves the walls and sills of a corresponding pressure. The dispensing with all stone foundation and substituting thoroughly gas-tar painted sills, let into a trench just large enough to receive them, with a two-inch tile in the bottom for drainage, has proved with me a good experiment. It simplifies silo-building by so much, lessens the cost, and why these sills will not last for years, I can not see.

Then I am convinced that two cheap boards, with tarred paper between, the whole well painted with gas-tar, is a superior wall to a single thickness of matched lumber. It makes an air proof, strong wall, with no chance for the boards to spring and break the matching, and let in air. The cost of two cheap inch boards is not much different from one good matched board, which one must use if single walls are built. I have a hundred letters from silo men substantially agreeing upon this point. Cheap, eight dollar per thousand hemlock lumber, gas-tar painted, makes a No. 1 silo.

I am also convinced that a large share of the loss reported as accruing at sides and corners is as much due to overtreading and tramping as from defective walls, and unknown causes. To tread solid at corners and walls is to almost thoroughly expel the air, and air is the very agent that causes the heat to rise and form gas, which expels the air better than treading. For two years we have done very little tramping and treading, and in its place have kept the silage banked up along the walls at least three feet higher than the center, and tread only just enough to keep the silage settling as fast there as in the center. When the corn is all in, leave it highest along the walls, and for four or five days tread along the sides until the silage becomes level. Then the outer layer of silage has taken on its heat, and expelled the air. If the air had been very nearly trodden out of it, at the start, there could not have been proportionate heating. The walls will tend to keep it cooler than it will be in the center. The air is not all expelled from this cause, and so the silage will mold more or less, and loss ensues.

We will have this to learn: that different varieties of corn result in silage of different grades of excellence, and no skill can make one grade of silage from sweet corn, field corn, and Southern white corn. The sugar elements of the three are not alike; and are not equal in amount. The sugar element will come out different, just as the sugar of different varieties of grapes results in wine of different tastes and peculiarities. The finest silage is made from thin-planted, well-eared, Virginia white corn, the sweetest silage, and that eaten with the greatest zest by the stock. Other things being equal, thinly-planted, abundantly-earing corn that has been allowed to grow to full maturity, and in cultivation, was not *root-pruned*, makes the best silage, and with the best keeping qualities.

While my own idea is to cut corn into the silo in half inch lengths, corn, if not too large, may be siloed whole with good success. The difficulty of having it mold at sides and corners, in consequence of defective packing, may be greatly obviated by having a load of green hay at hand, and as the corners are filled by crossing the tops of the corn fodder—never butts—forkfuls of this hay may be tread into the corners along with the fodder, and so make the silage more compact. Hay may also be occasionally scattered along the walls, and assist in preventing air spaces in the fodder adjacent to the walls, as air pockets will exist in the coarse fodder where it, in setting, "drags" on the inside surface, as it is pressed down by its own weight.

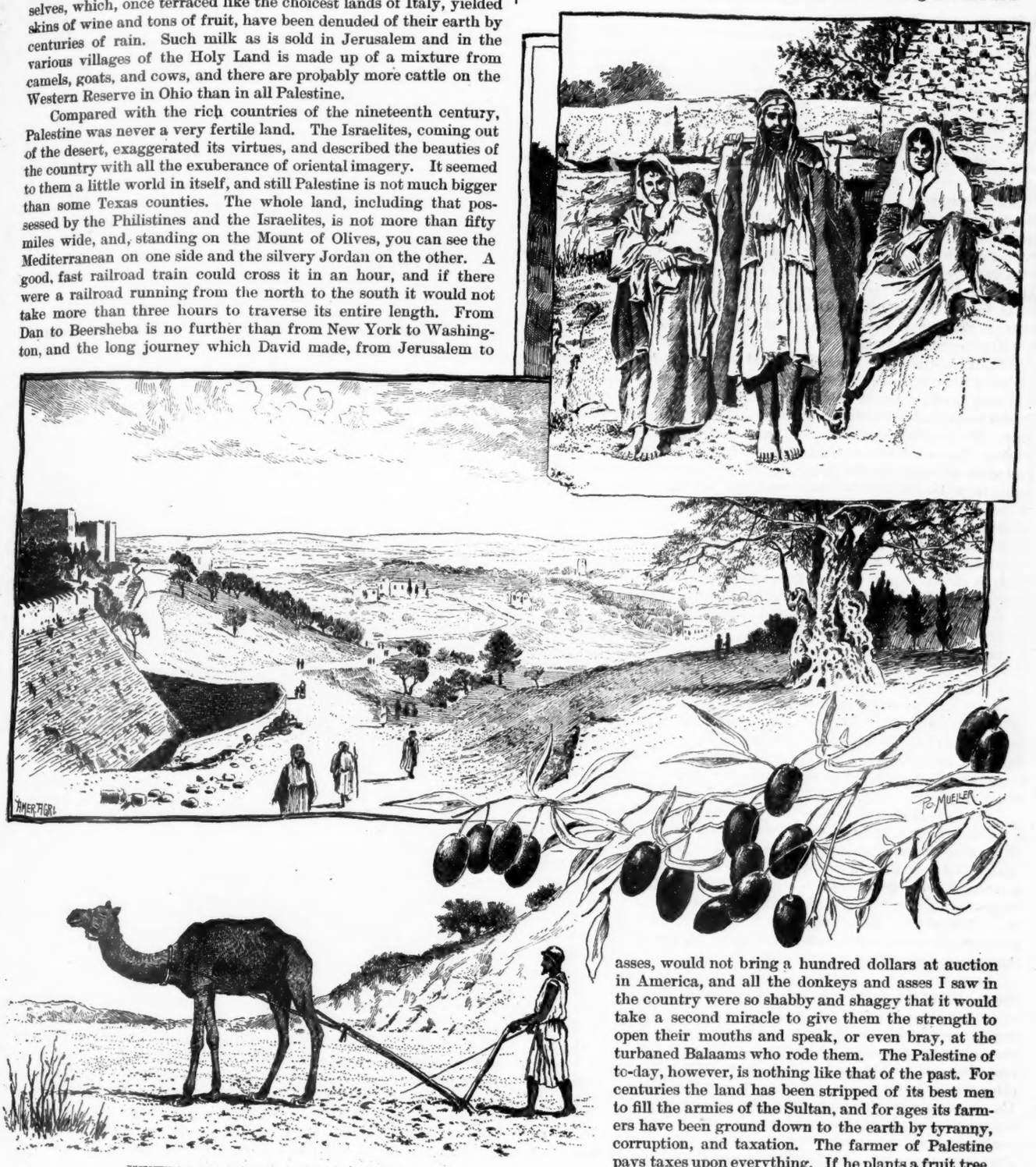
Clover Ensilage.—The great losses of clover-hay occasioned by rains last year ought to dispose farmers favorably to the silo. The reaper can be put in the clover as soon as the dew is off, and the clover be put in the silo almost as soon as it is cut. Hence, the silo makes the clover-grower independent of rain. Expensive cutters and powers, and the labor of cutting, are not needed for clover. Clover-ensilage, with grain and meal, is an excellent winter feed. Clover for ensilage should not be cut until it is mature. In the early days of the silo, clover was cut while too young, and the result was a very poor quality of ensilage. The amount of moisture in the ensilage is an important factor, as it always has a marked effect on its fermentation. Clover cut too early has an excess of moisture. This may be responsible for the poor quality of the ensilage; and it is certain that mature clover makes the better ensilage, as well as the greater quantity. And, as we can make clover-ensilage while the sun shines, and also when it does not, there is no need of hurrying the mower into the field.

FARMING IN PALESTINE.

FRANK G. CARPENTER.

The land of milk and honey has sadly deteriorated since the days when the Israelites took possession of it. The cattle upon a thousand hills have dwindled to scanty herds, and the hills themselves, which, once terraced like the choicest lands of Italy, yielded skins of wine and tons of fruit, have been denuded of their earth by centuries of rain. Such milk as is sold in Jerusalem and in the various villages of the Holy Land is made up of a mixture from camels, goats, and cows, and there are probably more cattle on the Western Reserve in Ohio than in all Palestine.

Compared with the rich countries of the nineteenth century, Palestine was never a very fertile land. The Israelites, coming out of the desert, exaggerated its virtues, and described the beauties of the country with all the exuberance of oriental imagery. It seemed to them a little world in itself, and still Palestine is not much bigger than some Texas counties. The whole land, including that possessed by the Philistines and the Israelites, is not more than fifty miles wide, and, standing on the Mount of Olives, you can see the Mediterranean on one side and the silvery Jordan on the other. A good, fast railroad train could cross it in an hour, and if there were a railroad running from the north to the south it would not take more than three hours to traverse its entire length. From Dan to Beersheba is no further than from New York to Washington, and the long journey which David made, from Jerusalem to Christ to Bethlehem, and the distance was only seven miles. I saw shepherds attending their flocks on the spot where little David killed big Goliah with his sling, and, as I looked on my rocky surroundings, it did not seem to me that the land was worth the fight. Mizpah, the little town upon the spot where the prophet anointed the farmer-boy Saul king, when he was out hunting his father's



PALESTINE OF TO-DAY.

the banks of the Jordan, is only fourteen miles. The Mount of Olives is only 2700 feet high by actual measurement. You can walk up it in half an hour, or a donkey will carry you to its top in twenty minutes. I crossed the plains of Sharon in coming from Jaffa to Jerusalem, and I found these garden-spots only twenty miles wide. I drove in a carriage from Jerusalem over the fields where the shepherds lay and watched the star which marked the coming of asses, would not bring a hundred dollars at auction in America, and all the donkeys and asses I saw in the country were so shabby and shaggy that it would take a second miracle to give them the strength to open their mouths and speak, or even bray, at the turbaned Balaams who rode them. The Palestine of to-day, however, is nothing like that of the past. For centuries the land has been stripped of its best men to fill the armies of the Sultan, and for ages its farmers have been ground down to the earth by tyranny, corruption, and taxation. The farmer of Palestine pays taxes upon everything. If he plants a fruit tree, he is taxed from the day the sprout shoots through the surface, and the taxes of a vineyard often amount to more than the crop. The rule is that one-tenth of the whole crop has to be given to the Sultan; but this tenth is estimated while the seed is in the ground, and the collection of it is farmed out to corrupt tax-gatherers, who get from twenty to thirty per cent of the crop instead of ten. The farmers of Palestine live in villages, and the sheik or ruler of the village often acts as judge and tax-gatherer. He is responsible to the Sultan for the well-doing and the revenues

of his subjects. Just outside of many of the villages there is a threshing floor, where the grain is trodden out or flailed out as it was threshed in the days of the Scriptures. The farmer dares not take away his grain from the floor until the tax-gatherer has come and picked out the Sultan's tenth, and after him the banker or the rich man who has loaned to the farmer has the right to take his debt and interest before the farmer can get the results of his toil. The people of Palestine are in many cases so poor that they have to borrow money to put in their crops. The rates charged are from ten to fifteen per cent, and the usurers of to-day are quite as bad as those of Bible times. In some cases the crops are put in upon shares, and the rich man who owns the land furnishes the seed and the animals to till the crop. The farmer gives his labor and his skill, and receives one-fourth of the crop, the owner of the land getting the other three-fourths and paying the taxes. The farmers pay a military tax also. They pay taxes on their donkeys and other animals, and there are import and export taxes. In my wanderings about Jerusalem I found a couple of Turkish soldiers at each gate, and I noted that every chicken and every head of lettuce that was carried into the city for sale paid a tax before it passed within the walls. I saw a farmer go in one day with a little donkey not bigger than a Newfoundland dog, loaded with about a bushel of gnarled olive roots. These were for fuel, and he expected to sell them for twenty-five cents in the market near David's tower. He was stopped and charged three cents duty before he was permitted to pass. Thus it is with everything salable.

The Philistines had, by all odds, the best lands in Palestine. The plains of Sharon have been worked ever since the days of Abraham, and they produce the richest of crops to-day. The soil is a deep brown loam, and I found the farmers plowing when I visited it in May. The implements used were the same as those of the time of Christ. There was the wooden plow, with its point shod with iron and with its single handle, which the plowman held with one hand while he walked behind his donkey or ox. He had a long goad in the other hand, to stir up the beast, and the words of the Scripture about the man putting his hand to the plow are applicable to this. In one of the fields I saw a camel hitched to a plow, and the great, ungainly beast shambled up and down the field with a sullen air. [This is shown in the lower left-hand corner of the illustration.] Nowhere did I see any improved machinery, and I am told that there is not a threshing-machine in Palestine, though the advanced farmer who owns the lands further up in Syria, where Abraham farmed, has a mower and reaper in active operation.

There are no big bank-barns in Palestine. The grain is either kept in the houses, and in some districts stowed away in tombs and caves, or packed down into boxes made of mud and dung. The hills of Palestine are full of caves, and the houses of the people are little better than holes cut into the rock. Many of the villages are built against the sides of a hill, so that the hill forms one side of the house, and the cattle and sheep are often kept in the same room in which the people sleep.

The food of the people is of the cheapest variety. Whole families live on from fifty to seventy-five dollars a year, and the clothing of a village would not exhaust the stock of a country dry-goods store. Only one man in twenty wears shoes, and the most common garment among the peasants is a woolen blanket of black and white stripes, made at home, and of full Turkish trousers and vest under this. The women, to a large extent, wear the blue denim, night-gown-like costume which you see in Egypt, except they do not veil their faces, unless they be Mohammedans.

Some of them are very beautiful. I found the women of Bethlehem among the most beautiful in the world. They seemed to be better off than those of other parts of Palestine, and their faces were as rosy and fresh as those of the girls of Ireland. They had beautiful eyes, and Raphael might have found a model for the Sistine Madonna in the land where Mary gave birth to the Christ. [The group shown in the illustration were residents of Bethany.] The shepherds of Bethlehem are fine-looking men, and sheep are tended on the plains about the city to-day as they were eighteen centuries ago. Many of these shepherds wear sheepskin coats. They have their staves in their hands, and they drive the sheep into the folds near the villages now as they did when Christ was born. The sheep of Palestine are of the fat-tailed variety. Some of the tails, I am told, weigh as much as thirty-five pounds. Palestine sheep are worth from three to five dollars apiece, and a great quantity of wool is shipped from Syria and Palestine to the United States. In the Valley of the Jordan and along the Dead Sea there are many fine pastures and about three-fourths of a million pounds of wool is shipped annually from Syria. I was in Palestine just before the shearing-time, and I noted that the fleeces were heavy. The most of the wool is exported unwashed, and the bulk of it goes to the United States. The wool is sometimes washed after it is cut from the sheep. The washing is done by women, who are paid from eight to ten cents a day for it. Wages are low all over Palestine. You can get a farm-hand for twenty-five cents a day, and he will not plead the eight-hour law, nor want a threshing-day dinner thrown in.

The plains of Sharon grow very fine wheat. If Palestine and Syria were under a proper government, and furnished with good means of transportation, they might export a great deal of grain. As it is, the cost of bringing the crops to the seaboard from the interior is immense. Everything has to be carried upon camels, which are big eaters. Three bushels make a load, and, for a distance of a few hundred miles, the camel will eat one bushel and it will take another bushel to pay his driver, so that the shipper has only a third for his profits, to say nothing of the cost of raising the three. There is now a splendid road from Jaffa, the seaport of Palestine, to Jerusalem, and there is talk of building a railroad between these two points. The distance is only forty miles, and the twenty miles across the plains of Sharon are almost level.

After you have passed this land of the Philistines you begin to ascend the hills of Judea, and you keep going up until, twenty miles farther, you reach Jerusalem. The city covers about the space of a three-hundred-and-twenty-acre farm. Walls about twenty-five feet high surround it, and there are about fifty thousand people packed inside of these. In going up to the city, I was struck with the evidences of the splendid agricultural condition of Palestine in the past. Every hill was once terraced, and there is no doubt but once the whole land was a garden. Even now there are many olive groves dotting the hills, and the flowers bloom in every crevice. I shall never forget the poppies of Sharon. They were as red as blood, and as big around as the bottom of a tin cup. There were millions of them, and they carpeted the plains for miles. They bloomed upon the mountains, and I picked them out of the holes in the walls upon the Via Dolorosa along which Christ was dragged to his crucifixion. The flowers which are seen everywhere are the evidence of the great possibilities of this land under proper cultivation and freed from taxation. If any other people than the Turks could own it, the terraces would gradually creep back to the hills, and the land would again bloom as it did when little David kicked up his heels in the farm-house of his father Jesse. It is a wonderful fruit-growing country. There are no finer oranges in the world than those which grow about Jaffa. Great quantities of these are exported to Europe.

Palestine exports a great deal of olive oil, and the Mount of Olives has its sides to-day covered with these silvery green trees. The trees grow to a great age, and are gnarled and knotty. [One of these is shown in the right hand of our illustration, which is a view looking from the wall of Jerusalem along the Bethlehem road.] A great deal of the wood is brought into Jerusalem and made into collection-plates for churches, paper-knives and other souvenirs, which are sold to tourists, and also exported in large quantities. The olive-picking is done at the same time all over the country. The people shake the trees or pick them. They sort the crop, using the best for eating, and making oil of the poorest. In some parts of the country this oil is used for lighting, and the probability is that the lamps of the wise and foolish virgins were lighted with olive oil. The making of the oil is of the rudest description. I visited an oil-mill in Jerusalem. It consisted of a cave cut out of a rock, in which a very tall camel and a very small donkey went round and round in a circle, operating a mill like that which grinds the bark in a tannery. This ground the olives to a pulp. In another part of the cave there was a stone ledge about as high as a table, and into this a hole had been cut, and one of the dirtiest Arabs I have ever seen stood here with his clothes tight up about his waist, and tramped the oil out of the olive mush with his bare feet. He was perspiring profusely, and there was nothing but a linen cloth between him and the mush. As this cloth got wet he would pull it up, and, standing on the olives, would wring out the oil into a can on the ledge. From this it was poured out into pots, to be strained for the market. The refuse of the oil is made into a sort of cake, and used to feed camels and cattle. It is said to be very healthful, and the animals grow fat on it.

Palestine is slowly improving in character. The Jews are coming back to the land from Europe and other parts of the world, and the strangest colony is that known as the Gadites, supposed to be one of the lost tribes, who hail from Southern Arabia. These people are engaging in agriculture, and I am told they make good

farmers. The Israelitish Alliance, consisting of the Rothschilds and other wealthy Jews, have established a number of agricultural colonies in different parts of Palestine. They have model farms in the Holy Land. One of these is on the plains of Sharon. It contains tens of thousands of vines and olive trees, and it consists of twenty-eight thousand acres. The Turks do not like to sell land to the Jews, and are averse to the improvement of the country. The Sultan fears that he will lose Palestine if it becomes valuable, and he would rather see it a desert than a garden. The Germans have several

FLOWERING BRANCH OF SOLANUM JASMINOIDES.

agricultural colinies in Palestine. There is one near Jaffa which is doing well. The German colonists believe it is their mission to bring Palestine back to its former state by cultivation, and they are trying to colonize the country. They have already shown that it has great possibilities, and the prospects of the Holy Land have not been so bright for years as they are now. If the land could be owned by Christians, and cultivated under Christian laws and Christian taxes it might again become a Land of Milk and Honey.

SOLANUM JASMINOIDES.

Our illustration represents a flowering branch of the large flowering *Solanum jasminoides*, a climbing plant of great merit, one that is easily managed, and can be had as a low climber, or a bush, by pinching in. In whatever shape it may be grown, it produces enormous clusters of star-shaped, pure white flowers, with a slight tinge of violet on the buds and back of the petals. It shows to the best advantage when grown on a low trellis, where it will yield hundreds of immense panicles of pure white flowers at a time, which keep a long while without fading. It is also an excellent winter-blooming plant for the house, and can be propagated freely by cuttings.

LIQUID MANURE FOR POTTED PLANTS.

House-plants do not, as a rule, flower freely until their pots are filled with roots, or, as it is usually termed, they are "pot-bound." When this is the case, the soil soon becomes exhausted, and the plant has nothing to feed upon. In such cases, recourse must be had to repotting with fresh soil, or applications of liquid manure. The latter is decidedly to be preferred, as, in repotting, the plants are liable to receive a check, either from root disturbance, or from a new growth consequent upon the new conditions in the supply of plant food. When a plant is ready to bloom, all that is necessary is to furnish food sufficient to develop the flowers. At this period the plant resents disturbance, and requires sustenance. This can in no way be so well applied as by liquid manures. All free-flowering plants, such as geraniums, petunias, callas, and oxalis, are greatly benefited by this treatment.

It may be urged that, in the use of liquid manure for house-plants, a disagreeable odor may arise. But, if applied in weather that will permit of free ventilation by opening the windows, this will very soon pass off. In extreme cold weather, commercial fertilizers can be used. In this case a tablespoonful to a pail of water will be amply sufficient. This should be prepared at least a day in advance, as some of the chemicals used are not readily dissolved in water—simply held in suspension—and to be used by the plants as required. From the use of liquid manures, in some form, satisfactory results are sure to follow.

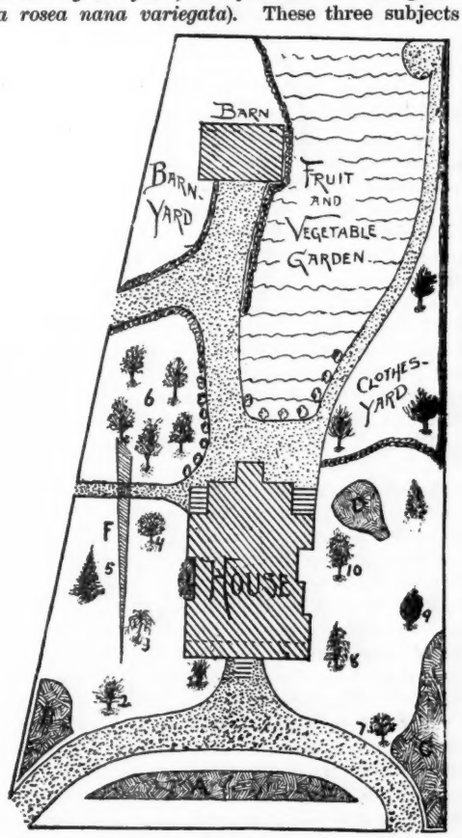
HANDSOME HOME GROUNDS.

ELMER E. SUMMEY, NEW YORK.

The illustration herewith presented is designed to suggest a mode of treatment for an irregular corner lot that contains about an acre and one-fourth. It is a plan prepared the past season for the Superintendent of the State Reservation at Niagara Falls. The ornamental features are brought out more particularly as they are applicable to any sized place that has a similar shape and situation.

The driveways are made as short as possible, the one in front being also used as a walk, while the rear drive runs up to the house for the unloading of fuel, and also serves as a walk, and a foot-path to the rear door is provided from the side street. The walk through the garden may either be graveled, as are the drives, or it may be left in turf. A yard for drying clothes is placed convenient to the kitchen and screened from the street by a hedge of American Arbor-Vitæ, which also separates the rear from the adjoining lot. Three sweet-cherry trees are planted for shade as well as for fruit, the sorts being Napoleon Bigarreau, Gov. Wood, and Yellow Spanish.

The contour of the surface about the house was such that a terrace *F* was formed on the north side of the house. The beds for ornamental planting were of the simplest form, but were well prepared, and the shrubs, etc., used were selected for contrast and beauty. The principal bed, A, is planted with Hardy Hydrangeas (*H. paniculata grandiflora*) hardy roses and variegated Weigela (*Diervilla rosea nana variegata*). These three subjects provide



PLAN OF SUBURBAN PLAT.

bloom from the time of roses until autumn, when the Hydrangeas are stopped by frost. The beautiful Weigela provides handsome foliage of creamy white and green throughout the summer, and adds its nearly pure white flowers in profusion during the latter part of June, and long in July. In this bed, also, until the shrubs have grown enough to entirely occupy it, various annuals may be thinly sown, or planted, if desired.

The corner bed, B, is planted with the two finest of foliage

shrubs, the Golden-leaved Syringa (*Philadelphus foliis aureis*) and Purple-leaved Plum (*Prunus Pissardi*), the first being of an intense yellow, while the latter offers its dark, shining foliage in contrast, and as they both retain their color until the foliage falls, the effect is beautiful all summer.

In the border, C, between the two lots, mostly low-growing shrubs and herbaceous perennials are used in order to not shut off the beautiful view of the Niagara river, the trees being also planted with that object in mind. The list of plants here named is only a

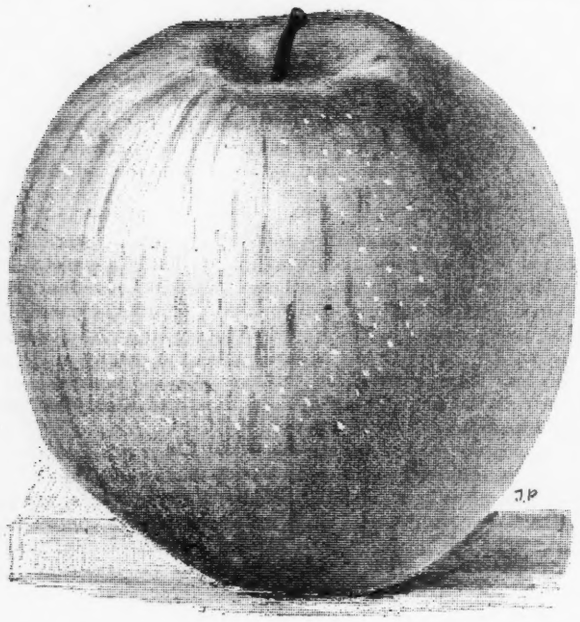


FIG. 1. NEW APPLE FROM INDIANA.

partial one, to give an idea of the kinds used, and which can be extended by any one, according to locality and taste. Plants, like Yucca filamentosa, Tritoma Uvaria, Coreopsis lanceolata, Anemone Japonica and Astilbe Japonica, are set in clumps, while singly or in twos or threes are used Cydonias in varieties, Berberries, Hibiscus, Philadelphus, Ribes, Funkias, Phlox, Deutzias, Spiræas, Azaleas, and in the front corner next to the drive were planted three dwarf evergreens, Thuja occidentalis, var. Geo. Peabody, Little Gem, and Hoveyi.

The bed D is designed as a sort of screen to the backyard, and is planted largely with rapid-growing deciduous trees, and tender annual plants, together with some evergreens for winter ornament, as follows: Populus aurea, Salix tricolor, Rhus Osbeckii and Cotinus, Pæonies, Hemlock Spruce, Aralia Japonica, Paulownia imperialis, Caladium, Ricinus, Canna, Dahlia, Sambucus aurea, Spiræa, Tamarix, and Forsythia.

About the lawn the specimens used are few, but choice, and are denoted on the plan by figures, No. 1 being the Plumed Pampas Grass (*Gynerium argenteum*), which, when given a rich soil and plenty of water, can hardly be exceeded for attractiveness. A showy-flowered Magnolia (*M. speciosa*) is placed at 2, while on the terrace at 3 comes a Weeping Cut-leaf Maple (*Acer dasycarpum var. Wierii laciniatum*), one of the most beautiful as well as remarkable of trees, having an elegantly-drooping habit, with deeply-cut or dissected foliage. A double White-flowered Horse-chestnut (*Æsculus Hippocastanum alba fl. pl.*) was set at 4, and is especially valuable from the absence of fruit which usually litters a well-kept lawn so annoyingly, when the single variety is employed, while the pure white very double flowers render it very ornamental.

At 5 comes an evergreen, the Colorado Blue Spruce (*Abies pungens*) which is generally conceded to be the most beautiful of the Spruce Family, and also one of the hardiest; the foliage is of a rich blue or sage color. Scotch or Wych Elm (*Ulmus montana*), which makes a fine spreading tree, is planted in a group at 6. In the foreground at 7 comes the Red-flowering Horse-chestnut (*Æsculus Hippo. rubicunda*), with showy red flowers forming one of the most valuable of the smaller ornamental trees. Eight is a Cut-leaved Weeping Birch (*Betula alba pend. lac*), which doubtless is one of the most popular of all the weeping-tree forms, having gracefully-drooping branches, white bark and finely-cut foliage. River's Purple Beech (*Fagus sylvatica var. Riversii*), the finest of purple-foliaged trees, is planted at 9. The habit of growth is symmetrically compact, the foliage at first crimson; turns to a dark purple during the summer. An oak that is distinguished from all others by the peculiar beauty of its deep green and finely-divided foliage, and habit of growth, is the Pin Oak (*Quercus palustris*) at 10. As the tree increases in size, the branches droop until the lower ones touch the ground. A Swiss Pine (*Pinus cembra*), a slow-growing evergreen, is set at 11, as it does not attain such a size as to shut out much of the view, and yet, with its silvery green foliage and pyramidal form, it is most beautiful, and should be a universal favorite.

The hedge alongside the barn is of Norway Spruce, planted four feet apart, while immediately back of the house are seven dwarf sour-cherry trees in hedge form, six feet apart. The hedge along the rear drive from the street to the barn is of Honey Locust (*Gleditschia triacanthos*), planted in a double row about nine inches apart. Along the upper side of the same drive, eight dwarf apple trees, or bushes, are planted six feet apart, to serve as an ornamental hedge. To give a detailed description of the fruit- and vegetable-garden would lengthen this article beyond its proper dimensions. The owner can extend or diminish its area to suit individual needs,

AN INDIANA SEEDLING APPLE.

We illustrate herewith a seedling apple, which has only recently attracted the attention of pomologists. The original tree sprung from a seed planted in a fence corner sixty-five years ago, by Mr. Jesse Hatfield, of Parke county, Indiana. The tree is still standing but shows very plainly the effects of advanced age. For half a century it produced large annual crops of sound fruit, the yield of one year being forty bushels. The tree was of strong, upright growth, bearing its fruit well distributed over all parts. The apple is described as follows: Size, large; form, round, slightly oblate, color red, slightly russety, striped with dull red, dotted russet; cavity, deep; stem, medium short; basin, large, shallow; flesh, white, tender, slightly sub-acid, delicate aroma; quality, best; use, table; season, in good condition November 15. It is asserted by neighboring orchardists who have produced it on grafts from the original tree that the apple

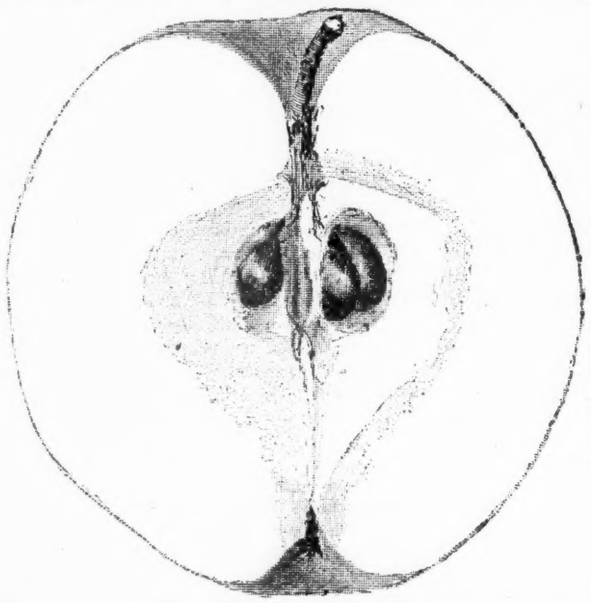


FIG. 2. SECTION OF NEW APPLE.

is free from scab, and the tree is perfectly hardy in the region where it originated. This may well be believed in view of the great longevity of the original tree.

Planting Raspberries in Summer.—The young root sprouts of raspberries may be successfully transplanted at this season, and will, with proper care, produce a fair crop of fruit next summer. A damp and cloudy day is most favorable for this work. The ground where the plants stand should be well soaked with water, and each sprout be taken up with a solid lump of soil, as large as can conveniently be carried to the new bed. Here they are placed into the holes or furrows which have been dug previously, taking care not to break the clumps.

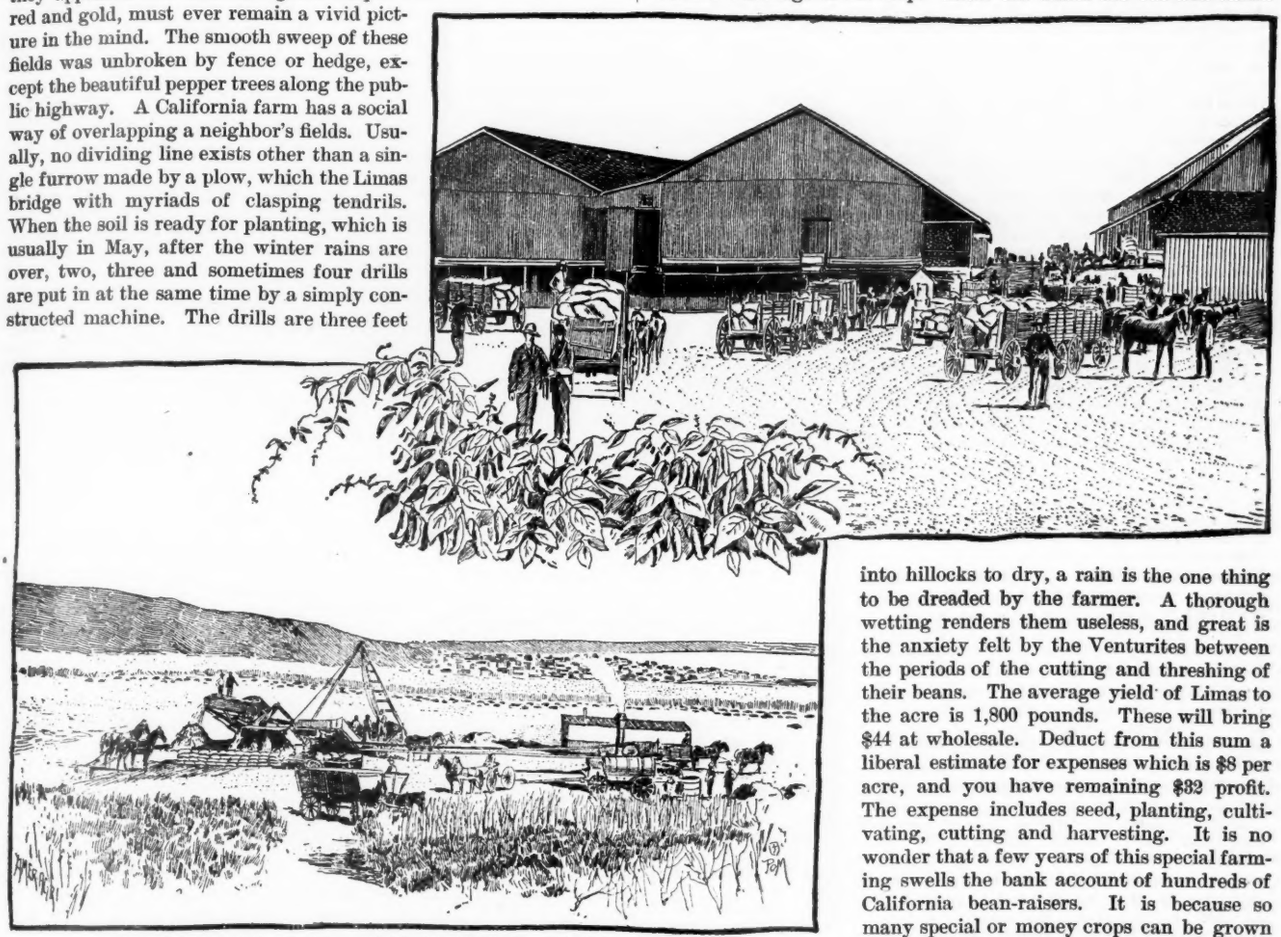
LIMA BEAN CULTURE IN CALIFORNIA.

NINETTA EAMES, CALIFORNIA.

The extensive raising of Lima beans in California is of recent date, though this variety of the Pulse Family was first introduced here in 1875. Now, California is conceded to be the most successful bean-growing country in the world, and two-thirds of the crop are Limas. In spite of their remarkable productiveness in this climate, the California Limas are of delicate flavor and exceptional size. Their culture was first begun in the vicinity of Santa Barbara and San Buenaventura. The latter place has been termed the "bean county" by envious rival sections. Now, however, the name has taken on a respectful significance, for Ventura is becoming richer from her bean product than if she were the possessor of a Shasta gold mine. It was the writer's good fortune to visit this bean paradise late in the season of last summer. The sight of hundreds of acres of graceful vines, clinging so closely to the rich soil that they appeared one immense green carpet touched with flakes of red and gold, must ever remain a vivid picture in the mind. The smooth sweep of these fields was unbroken by fence or hedge, except the beautiful pepper trees along the public highway. A California farm has a social way of overlapping a neighbor's fields. Usually, no dividing line exists other than a single furrow made by a plow, which the Limas bridge with myriads of clasping tendrils. When the soil is ready for planting, which is usually in May, after the winter rains are over, two, three and sometimes four drills are put in at the same time by a simply constructed machine. The drills are three feet apart. The beans are cultivated once or twice after planting, according to the amount of weeds, and are never irrigated. Some time in August or September the crop is cut with a bean-cutter, which is an outgrowth of primitive methods of severing the vines, such as cutting the stalks with a sharp blade fastened in the end of a stick, or running a plowshare close to the roots of the vines. The bean-cutter is as simply made and managed as the planter. It consists of a V-shaped knife, the blades of which are from five to six feet long, and attached to each side of a wooden sled about eight feet in length. The cutter is drawn by three horses, and guided between the rows by one man. It severs two rows at once, which keeps four men busy raking up the loosened vines into little heaps to dry. From fifteen to twenty acres of beans are thus cut in a single day.

The drying of the beans is a slow process, usually taking from three to four weeks, according to the weather. They are then run through a thresher, or tramped out on a bean floor. The former method is now universally employed where the crop is large. Every machine has its "gang," numbering all the way from twenty-five to thirty men. These are variously engaged in pitching the heaps of dried vines into header-wagons, feeding them afterward to the yawning mouth of the champing-machine, sewing up the filled sacks and stacking the bean straw to be later used as fodder for cattle and sheep. The illustration shows in the lower part a threshing scene; above is a not unusual view of a warehouse. A bean floor is more troublesome, but less expensive. After the floor is sufficiently hardened, the vines are thrown under the feet of horses and the wheels of buggies, and disk-cultivators that are kept revolving around in a circle until the beans are tramped out of the pods. They are then cleaned by running them through a fanning-mill.

In 1887, there were shipped from Saticoy alone, more than two million pounds of Lima beans, besides over eight hundred thousand pounds of small white beans. The year following, a careful estimate of the Lima yield at Ventura reached as high as eight thousand tons. At the lowest price paid these farmers, which is two and a half cents per pound, their returns would have been something approaching $400,000. An early rain, however, did considerable damage to the crop. After the beans are cut and raked into hillocks to dry, a rain is the one thing to be dreaded by the farmer. A thorough wetting renders them useless, and great is the anxiety felt by the Venturites between the periods of the cutting and threshing of their beans. The average yield of Limas to the acre is 1,800 pounds. These will bring $44 at wholesale. Deduct from this sum a liberal estimate for expenses which is $8 per acre, and you have remaining $32 profit. The expense includes seed, planting, cultivating, cutting and harvesting. It is no wonder that a few years of this special farming swells the bank account of hundreds of California bean-raisers. It is because so many special or money crops can be grown in California that the outlook for her future is so bright. Not only do these crops, especially beans, bring a fair price but they sell for cash, enabling the farmer to purchase his supplies to the best advantage, and putting him in much better shape financially than the man who has to depend upon wheat alone.



THRESHING AND MARKETING LIMA BEANS.

Plant Fodder-Corn.—It is probable that every August thousands of farmers resolve that the next spring they will put out a field of fodder-corn, yet break the resolution when spring comes. It is the rare exception that July and August do not shorten the pastures. Some seasons the pastures are almost burnt up: if there has been no provision made for other feed at this season, the animals must lose flesh, and the cows must fall off in their milk-product, or else grains and purchased food must be fed liberally. Fodder-corn is cheaper than loss of flesh or grain. Allowing the animals to lose flesh is very wasteful. It will require at least twice as much food to regain the flesh as to retain it. Every year the testimony becomes stronger that fodder-corn should not be sown broadcast. It may be planted in hills, but the largest crops, except on very foul land, can be raised by planting in drills. Fodder-corn should be planted in rows at least three apart and as well cultivated as field-corn.

HOUSEHOLD

The Secret of a Long Life.*

MARK TRAFTON.

"Eternal vigilance" is not less the price of physical life than of liberty; all organized life, whether animal or vegetable, depends for its perfection and perpetuity upon care and a strict regard for the laws of nature. "There is one Lawgiver," says high authority, and physical law is just as holy and sacred as moral law, and he who trifles with one of nature's laws is, in the sight of the Lawgiver, just as guilty as one who disregards moral law. Strange it is that one will shudder at the thought of a breach of the ten commandments and yet live in a daily disregard of the laws of physical life. It is true we must all die, but it is not true that the period of our death is fixed by divine decree. We must die under the laws of organization, like all organized beings. The fruit from bud and blossom grows, develops, ripens and decays; so with animal organizations. Man, as other animals, develops from the embryo to the perfection of manhood, ripens and decays. There is a limit to the one as to the other, yet the startling fact stares us in the face that a large proportion of the *genus homo*, as with fruits, prematurely falls.

The law of animal organizations seems to be that all animals, of which the human is one, should live five times the period of their growth. A dog grows until two years of age; his life period is ten to twelve years. A horse grows until five; his period is twenty-five. An elephant grows until twenty, and his average life is one hundred years. So with man; he grows and physically develops until twenty, and ought to live to the age of one hundred. But, alas, a centenarian is regarded with a strange curiosity, while the death of half the human family before the age of seven excites no surprise. Should one-half of the progeny of the lower orders of animals die at or soon after birth, it would send consternation and dismay through the community; but these young humans drop, and the mourning parents are expected to be consoled by the reflection that it is a "mysterious Providence," or that the "Giver of all Good had need of them to people Heaven!" The mystery about it is that while the brutes are left to the laws of God in nature, man—this wiser animal—violates all these laws from the first moment of being.

Longevity must be rooted in infancy and early childhood. Each period of human life is probationary for that which follows, and, to a great extent, determines its character. Hence the old proverb, "The child is father to the man." I have no space to enter upon a discussion of these several points, upon each of which a book might be written, but when one sees, as often has been seen, a mother more regardful of the laws of hygiene in the care of a favorite lap-dog than in that of her infant, we can but exclaim, "O fools! Were a moiety of the care and attention given to favorite pet animals bestowed upon infant children, there would be less mourning in households and complaint of divine dealings with men."

At the age of thirty, man has fully developed both his physical and intellectual powers, and is in full career as an active factor in life's grand enterprises. But now this is a period of especial danger to the active, ambitious person, male or female. One has a certain amount of storage power and energy upon which to draw, like so much deposit in a bank. Now the one who wishes length of days—and who does not?—must be cautious in drawing his drafts, for though indulgent nature may honor an overdrawn draft, she never fails to return them for redemption, and often they come to us to find us bankrupt. It is one's religious duty to carefully preserve physical life to its utmost possible limit, as it is to cultivate the highest spiritual life. Settle it in your inner heart, O man, that you can do nothing for your Creator only as you prize and honor his work. You sin against God when you sin against yourself, and you do this when you neglect or abuse your body.

In these days of rapid movement in all the affairs of life, we are constantly running into excesses which are self-destructive. We start on hearing of a suicide, but we seem to forget that there are many forms of self-murder. Not a day passes that we do not hear of some one dropping dead in the street or in his place of business. "Heart-failure," says the wise-looking doctor. Yes, but what was the cause of this failure? If he is honest he will answer: "Some kind of excess; his reserve power too highly taxed, and overdrawn drafts." But will business men and pleasure-seeking women heed this? I fear not; but do not call on me to perform your funeral rites, as I shall surely say, "Died by his own hand."

Up to fifty we glide or rush along a level plateau on the summit of the hill of life, when we commence a descent into the dark valley. Our physical strength begins to weaken; we do not take a flight of stairs with the heedless haste of former times, but find it helpful to keep one hand upon the rail. Old age is coming. Now just here I wish to offer some practical suggestions:

First, as to clothing. Heat is life, cold is death. There is now less animal heat developed than when you were younger. Of course you must husband and save what you have. There are three points at which death directs his sharpest attacks, and which at all periods of life should be most carefully guarded—the back between the shoulders, the chest and throat, and the feet. For years past I have had my vests lined with flannel, and have worn flannel undergarments and heavy hand-knit socks. Do not sleep in cotton shirts, but woolen. Do not sleep in a cold room, but in cool weather take off the chill. Sleep all you can. Avoid all evening labor of the brain, all excitement of all kinds, and retire at an early, regular hour. Rise, not with the early bird or worm, but when you want to.

Food: For fifty years I have said, "You are killing yourselves by overeating," and have been laughed at as a fanatic; but a recent remark of a celebrated physician in London comforts me: "More people," he says, "kill themselves by eating than by using intoxicants." And the same statement appeared in a late British magazine. I saw last summer, when coming from the Maine woods, a Catholic priest, the picture of perfect health. Some one said to him: "I wish I could have health like yours." "You may," replied he, "if you will live as I do. I eat but once in twenty-four hours. After my full breakfast, I eat nothing until the next morning."† A lesson all persons should learn is that, when decay begins in the human system, all the organs lose vigor alike, and those organs which have been most exercised most rapidly fail. Yet people will not heed the admonitions of nature, but gormandize and cram the stomach the same as when young, and then resort to drugs, thus laying upon abused nature the double task of getting rid of the redundant mass of food and the poisonous drugs. Do you desire long life, a quiet, peaceful old age, with nights of soft refreshing slumber? Cease all your excesses in eating. Remember, it is not the quantity one eats, but the amount digested and assimilated that yields strength; all beyond this is rebellion against nature.

Will you hear a bit of the experience of an octogenarian? I was a rather frail boy, flat-chested, and spent four years from my fourteenth year bent over on a shoemaker's bench. I taught myself to perform on a clarinet, and played in a band four years, and this developed a good chest, and I have taken pains to preserve it as above hinted. I am to-day as straight in my spinal column as a pine of my native State. At the age of twenty I was in the itinerant ministry of the Methodist Episcopal church, and when I had been preaching two years a physician said to me: "You must stop preaching or you will not live five years." He has been in his grave forty years; after this busy and exciting life of sixty years, I am here writing a word to my coevals, and "my eye is not dim, nor my natural force (much) abated." Why? Because, with the blessing of God, I have watched the operation of nature's teaching and obeyed the teacher, and taken care of myself. For eight or nine years past I have eaten no flesh of dead animals. For many years I have eaten whole wheat, or Graham bread. My breakfast is the principal meal for the day—two soft boiled eggs, a saucer of oatmeal mush, bread, and one cup of coffee. My dinner is bread, a slice or two, a cup of weak tea; at night, a half-pint of milk and a slice of bread. I hardly know from any sensation whether I have eaten or not. I have gained in weight, and suppose, unless some accident befall me, or I slip into some indiscretion, I shall be at last a centenarian.

* This is a subject which Dr. Trafton is justly entitled to treat, as he is still, at eighty years, one of the most active and vigorous of men.—ED. AMERICAN AGRICULTURIST.

† We presume Dr. Trafton would agree with us that no farmer or any other man who works hard in the open air should attempt any such regimen as this. Such workers require nutritious food and plenty of it. We regulate a horse's food by the amount of physical labor he is performing. A wise man will do the same as to himself.—ED. AMERICAN AGRICULTURIST.

Home-Made Curtains and Fixtures.

EDNA LEE.

Fixtures are sometimes more of a perplexity than curtains. Very often the brass rods sold for the purpose can not be made to fit a certain window, but I will tell you how to get those that will answer every purpose, will fit, not cost one-third the price, and look equally well. I procured mine of a carriage manufacturer, but any blacksmith can make them if you will tell him how. The rod you can buy at any hardware store. Measure the length across the sash from side to side at the middle and bottom or upper sash or transom, or wherever you wish your curtain to hang. This rod should be about the size of a slate pencil, and just as long as the window is wide, and not interfere with the freedom of movement up and down. If you have to buy a long rod, it can be cut. Have the blacksmith flatten the ends and drill a hole in each end of sufficient size to admit an ordinary picture nail; this furnishes an ornamental finish for the ends. Hold the rod in place, and with a gimlet inserted in the hole in the rod bore a hole in the sash; put in the nail, and a slight tap with a tack hammer will hold it firmly. When it is thus adjusted at each end, before you screw on the heads, gild the rod. I use Mashing's gold paint, which I find wears well and retains its luster a long time; the bronze that is sold with Diamond dyes is also very good and cheap. I use rods at the middle of the window, also at the bottom, and can then draw them to suit.

For curtains I have used bolting cloth, painted and decorated in etching. This is the finest of all fabrics for the purpose; yet lovely ones are made of lace, china silk, scrim, or Madras, and for lights in a door, if thick ones are desired, any suitable material can be used. All can be trimmed or decorated to suit your time, inclination or purse. They can be made in two widths, or all in one. Make a hem at the top wide enough to insert the rod; also one at the bottom if you use two. If no rod is used at the bottom, they are daintily trimmed on the inner edge and across the bottom; or, if all in one, all around the sides and bottom. Insert the rod in the hem, place it on the nails, screw on the heads, and lo! we have as convenient and as ornamental a window decoration as any one could desire at a little cost, and one that can be easily taken down for cleaning the glass or dusting. If you do not own your home, and find that your curtains are too long for where you desire to use them again, have the required amount cut off one end, bore new holes, and the change is made. By the quantity saved, you may be able to have another pair to shut out an ugly view that would otherwise intrude upon you all the time.

Crimson China silk, old-rose or any of the yellow shades, produce a softening glow in the room. Blue is cool-looking, but does not stand strong sunlight. White and cream are always fresh and new, because when soiled they can be laundried, but should never be starched, as their soft folds are one of the chief charms.

Lampwicks for Emergencies.

FRANCIS H. PERRY.

Those who live at a distance from town and its supplies, sometimes find that, among the multiplicity of wants that must be attended to during a visit to "the store," memory has proved treacherous, and wicks—the very things they can not do without—have been omitted from the purchases. When such an event occurs, resort to your roll of cotton-flannel remnants. Take for a guide the bit of wick that you know to be of the right size, cut a strip of cotton-flannel ten or twelve inches long and wide enough to double

smoothly into a band matching the guide in width and thickness (three thicknesses usually, or a little more, the downy side *folded in*), and run three or four parallel rows of lengthwise machine-stitching through it. It is then ready to do duty as a substitute till a better one can be obtained, which will be better only because it may not need trimming quite so soon. A plain strip of felt from an old soft hat will do for the same purpose, but is not nearly as good as the cotton-flannel.

A thoughtful housekeeper, who tries to be prepared for all emergencies, hearing of this, sat down at her machine, with a roll of pieces and wicks of three sizes, and in a short time had an assortment of nice home-made wicks, of lengths varying from six to twelve inches—just as the pieces happened to come—some stitched with white and some with red. She soaked them in strong salt and water, dried them, and stowed them in an empty cocoa-can, labeled "lamp-wicks," which she placed on a shelf by the side of the lamp-filler, saying, energetically, "There! Forgotten lampwicks will not send *us* borrowing again."

Drilling for Natural Gas.

JOHN C. BOAL.

I live in the great gas belt of western Pennsylvania, in as beautiful and convenient a situation as any mortal could desire. The gas is found at a depth of about 1,750 feet. In drilling, the excavation is about eight inches in diameter for several hundred feet; then a change is made, and a smaller drill is used, reducing the size of the hole to about five inches. This change not only facilitates the drilling process, but is absolutely necessary. There is rarely, if ever, a gas-well drilled in this vicinity without striking a vein of strong salt water at about 1,000 feet from the surface. This inflow must all be kept out of the excavation as the process of drilling continues. This is done by a casing of iron pipe inserted into the excavation in sections, each about thirty feet long, screwed together. The lower end of the first section inserted into the well has a rubber cushion attached to it, and when the casing is adjusted in the well this cushion has its position on the shelf on the rock which was made by the change from the larger to the smaller drill. The pressure of a column of salt water 1,000 feet long upon the elastic cushion prevents both fresh and salt water from interfering with the completion of the well, or with the escape of the gas when the "roaring" volume is struck. The drilling is done by machinery propelled by steam, which is usually generated by gas conveyed from an adjoining well by a line of one-inch pipe. The derrick which supports the pulley and cable by which the drilling is conducted is usually from seventy-four to eighty-four feet in height, and about twelve or fourteen feet square at the base, tapering equally on all sides to about four feet at the summit. The average expense of "putting down" a gas-well is about $5,000; but, of course, the cost in some cases greatly exceeds these figures. Frequently a cable will break and the drilling tools lodge in the well, oftentimes requiring two weeks to "fish" them out; the drilling tools usually weigh about 2,500 pounds.

When a strong vein is struck the first report of escaping gas can be heard ten miles; a first-class "roarer" has an escaping or exhausting pressure of 500 pounds to the square inch. After a certain locality has been tested, and gas found in paying quantities, a line of pipe is laid to some town or manufacturing establishment or center. A line of eight-inch pipe will convey the gas produced from eight or ten wells. The pipe line is usually placed about three feet beneath the surface of the ground, and no matter what the character or topographical features which exist between the gas-wells and the locality to which the gas has to be conveyed, a direct route is taken. A narrow ravine, 100 feet deep, is considered a small obstacle for a pipe line.

Four dollars per day is the usual price paid by gas companies for a man and team. The pipe costs about $1.20 a foot. Added to this are the cost of railroad transportation, the teamster's wages, and the wages of a gang of men called "stringers," who help to unload the pipe from the wagons and place it in a straight line. Then there are the "twisters," who screw or twist the different lengths of pipe together by means of strong and heavy tongs. Following them are the "ditchers," composed chiefly of Hungarians and Italians. Lastly come the "fillers," the ditchers having put the pipe into the ditch. The company pays fifty cents per rod for the right of way through farms, with additional money where their line passes through grain fields; or, if the farmers prefer, the company will furnish them with all the gas they want for domestic purposes, besides all pipe and necessary appliances for connecting a private residence with the gas line.

A Breezy Word from Michigan.

JENNIE BUELL.

The medical school of Dr. Sun has too few enthusiastic practitioners among farmers' wives and daughters. They sweeten their tinware and crockery by the orb of day; they bleach their cotton in its rays, dry their floors, or expose their bedding to it; but, as for sitting down to shell peas or pare potatoes with their feet in a strip of sunbeams, or bathing other parts of the body in its flood, for the sake of the good it will do them, they never think of such a thing. There is little doubt that if country girls would court the sun as persistently as they sometimes court other sons, they would furnish fewer dragged-down, pale-faced women for farmers' wives. Let it be borne in mind that outdoor life is beneficial, whether had at work or at play. Study to be in the sunlight. Sun heat is better than stove heat. Plan to utilize it in preference. In summer, swing a hammock near the house or on the porch, and acquire the habit of dropping into it rather than lounging on a couch or in the rocker indoors during intervals of work.

While walking excels almost all other outdoor exercises, the woman who stands to do much of her work will be hard to convert to that faith. She will prefer to ride. But she does not ride enough. Often she will not even handle the reins herself. Such a woman lives beneath what should be a country woman's privileges. She should not only know how to harness and hitch up a horse, but should, so far as possible, subject her work to the liability of being called upon to go on errands away from the farm. The mental relaxation will cheer her thoughts, and the drive rest her body. Men have held a monopoly of the local excursions off the farm by custom more than by necessity. They prove themselves glad to have a female "errand-boy" in cases of need, and it is only justice to themselves when the women of the farm become such.

Outdoor games are no more needed by any class of people than by these same country women and girls. Theirs should be a joyous life. Croquet, bean-bags, lawn tennis, and any other open-air sports, are worth their while. Tennis is particularly adapted to their needs and roomy grounds. It is an exhilarating and inexpensive game. A certain country court was furnished for a little over ten dollars; and this, divided among a club of a dozen members, made the expense very slight, beside the advantages to be derived. A club of this size could be formed in scores of country neighborhoods. As the game may be played by two, no time need be lost in calling together a large company in order to secure frequent and much playing. Moreover, the strife and skill demanded by the game, its picturesqueness and pleasant associations, besides its physical possibilities, make it an admirable adjunct to every home striving to solve the old problem of "how to keep the boys and girls on the farm."

A Cunning Fish.

DR. CHARLES C. ABBOTT.

He who goes a-fishing in our quiet inland waters soon becomes familiar with the pretty golden and ruddy sun-fish; but no angler, simply as such, ever saw this lively creature at its best. It is one thing to catch them, which is too easily done to consider the matter sport, and another and far nobler thing to watch their winning ways when guarding their nests. He who does this will realize what a fish really is, for to credit these animals, as a class, with a modicum of common sense, seldom occurs to any one. But this much can be set down as incontrovertible—a fish is no fool.

Not long since, as I was passing over a little bridge, I noticed a big mother sun-fish in a violent state of trepidation, and paused to determine what was the trouble. A single glance told me the whole story; a host of little minnows were darting in at the eggs that covered a little space of the shallow nest, and the parent fish was defending them as best it might. The attacking minnows were in two bands, and as one of these was chased away the other rushed into the little depression in the sand. But before they could seize the eggs, or so I thought, the sun-fish returned with a rush and scattered the intruders.

So it kept up, and apparently would have never ended, had not a more formidable enemy of the sun-fish appeared upon the scene. This was a huge sucker, and entirely too powerful a foe to be met in single combat. The sun-fish recognized this at once, and hit upon a happy expedient, which succeeded admirably. Instead of vainly darting at the sucker, it sped round and round its nest with inconceivable velocity, and so stirred up the water that the intruder was frightened or bewildered, and beat a hasty retreat.

It was all a matter of a few minutes, but how much transpired! The little minnows proved their cunning by their tactics; but what a deal of quick wit centered in the brain of the sun-fish!

Strange Ideas of Beauty.

AGNES CARR SAGE.

That "beauty lies only in the eye of the beholder" is a saying which is conclusively proven by the various standards which exist in different countries and among different people, for, as one witty writer expresses it, "That which is deformity at Paris may be beauty in Pekin." White pearly teeth seem to us a treasure to be desired, yet many a Japanese dame gilds hers, which is much the same as "gilding the lily"; the ladies of India paint theirs red, and in Guzurat a row of molars dyed a sepulchral black is much admired. No Muscovite woman has so fresh a complexion that she does not plaster herself with paint; and Arabian females think they are adding to their charms by staining their fingers and toes red, their eyebrows black and their lips blue, while tattooed creatures are greatly admired in Greenland and in all the islands of the Pacific and Indian oceans. In New Holland scars are thought pleasing, and the inhabitants, to obtain them, cut themselves with shears and keep the wounds open a long time, while parents often go so far as to mutilate their infants by cutting off the little finger of the left hand at the second joint. In China small round eyes are liked and girls pluck their eyebrows that they may be thin and long, besides enduring untold torture and crippling themselves for life in order that they may have tiny but perfectly useless feet.

In ancient Persia the possessor of an aquiline nose was thought worthy of a crown, and if a competition arose between two rival princes the people generally went by this criterion of royalty. In Africa, on the contrary, the flatter the nasal organ the better. An African beauty must have a nose like a pancake, thick lips, small eyes, and a black skin like polished ebony.

There are countries where mothers break the noses of their children to produce the approved shape, while in others the poor babies have their heads pressed between two boards, that they may become square. With many semi-civilized nations nose ornaments are as popular as ear-rings and I don't know that they are any more barbarous, although not so becoming. Can you not imagine a matron of Peru priding herself upon the thickness of her nasal ring, which is proportioned to the rank of her husband, or wishing to multiply these rather weighty decorations?

Long and abundant hair has always been woman's "crown of glory," but the preferred color varies with the fashion, black being at one time *la mode*, at another brown, and then, again, the tawny blonde. The Persians have a strong aversion for red locks, while the Turks admire them above all things. Titian delighted to paint golden red tresses; Queen Elizabeth made her auburn head fashionable; while Mary of Scotland covered her own beautiful hair with a "red front." Cleopatra, too, was red-haired, and Patti, the divine songstress, has lately dyed her changing locks the much disputed tint. Aureoled locks were not many years ago the rage in this country, and Venetian ladies have always counterfeited yellow hair. How to arrange and bedeck this head covering has also, from time immemorial, been a question of interest with the fair sex, and like everything else is a matter of taste. Roman maidens formerly wore their hair hanging loose, intwined with jewels and flowers. The Chinese belle screws up her tresses with pins and skewers, and sometimes, on great occasions, mounts above them the figure of a certain bird, composed of either gold or copper. The wings fall over her temple. The spread

tail forms a tuft of feathers. The beak droops to the top of her nose, while the neck is fastened to the body of the artificial fowl by a spring and moves and trembles at the least motion. The Myantsees, too, have a curious style of coiffure, for they carry on their heads a light board, something over a foot in length and six inches broad, which they cover with their hair and seal with wax. Uncomfortable indeed must this adornment be, and let us hope that pride is truly sustaining, for these devotees of fashion must keep their necks straight even when lying down or stooping and, as their country is woody, are often discovered caught by their cumbersome head-dresses in the branches of the trees. Only once or twice a year do they undertake to comb out their locks, and then it requires a full hour before a hot fire to melt the wax. A still worse head-gear, however, are the caps worn by the inhabitants of Natal; for they are a sort of bonnet, six or ten inches high, made of the fat of oxen, and fastened to the hair by grease, so they are there for life.

Surely, when we consider these curious customs and vagaries we can exclaim with the poet:

"Beauty, thou wild, fantastic ape,
Who dost in every country change thy shape,
Here black, there brown, here tawny and there white."

Painting on Cloth.

There are several methods of this fascinating branch of decorative art, all fair results of which help to ornament the home. If the painting be done in oil colors, the finer materials, as satin or silk, have to be first prepared to prevent the oil, with which the colors are mixed, from spreading. The design is first drawn carefully on the cloth with either lead pencil or chalk, according to whether the material be of light or dark hue. Then take prepared ox gall (to be had in all art material stores) and paint all parts of the design within the outlines, using a soft, pointed brush. This having dried, the surface is ready to be painted upon. The smaller parts of the design, such as stems of flowers, grasses, etc., need not be primed with the ox gall, provided the paint is put on rather dry with a not overcharged brush. It is best to use tube colors and to add little or no oil or turpentine in mixing the different tints. As regards coarser material, denims need no priming with ox gall, if the colors are used with no medium but the oil contained in the average tube.

A portiere of blue denim decorated with bands, one each at top and bottom, or single as the taste of the artist may suggest, decorated with a design of milkweed, has a striking effect, while the design as well as color scheme are quite simple and easy of execution. A section of one of these bands is shown at Fig. 1. The pod is painted in dull leather brown with colder blackish brown shading; where the inside shows it has a light warm ochre tint. Next paint the silk, which is bright white, with slight lemon yellow tinge nearer the seeds. The shading of the silky seed wings is easily effected by putting the white paint on thinly, rubbing it in well so that it will appear bluish. Then add the higher lights with a full brush. The seeds are of a rich brown black.

The design of Iris is better adapted to the brown denim; Fig. 2 shows one. In case other material, satin, plush, felt, etc., is employed, it is well to use the shades of drab, pink, faint yellow, or light dull green. The flowers are pale bluish purple, which is best mixed with rose madder, cobalt blue, and white, the different shades being obtained by adding more or less of the blue and red with the white; for the deepest shade add a little ivory black. The stems and buds are green, which should not be bright and crude. Use Antwerp or cobalt blue, yellow ochre, a little white for higher lights; add in some parts a little burnt sienna or other warm brown.

If used for a portiere, the figures of the designs have to be repeated,—in an unconventional way,—the same as in embroidery. If the cloth be slashed or cut at the bottom in stripes one-fourth or three-eighths of an inch wide, and as long as fancy may dictate, then slightly curled, it will give the portiere a pretty and finished appearance.

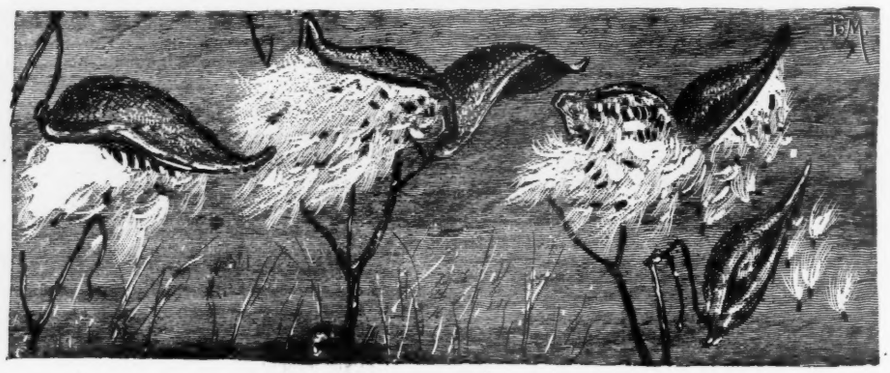


FIG. 1. SECTION OF BAND OF PORTIERE.

How to Spend Money.

There are very many people who do not know how to spend money, unless by spending one means simply to get rid of it. To spend wisely is another thing, and one in which parents would do well to educate their children. It is quite a distinct science from that of saving, for one may know how to save,—that is, to accumulate,—and yet not know how to spend to the best advantage. Many women when they go shopping bear out the truth of this assertion. They may have been saving the egg or butter money for months for this very occasion, but when they get home find that they have nothing to show for their money. They are dazzled by the display in the shop windows, and buy first one little thing and then another, until there is nothing left in the purse wherewith to purchase the more needed articles. To avoid this, decide before you set out just what you want, and be sure that you really do want just that thing, and not something else more. Don't buy just to get rid of your money, like the little boy whose unwise grandparents kept him supplied with pocket money till his childish imagination could not suggest the means of getting rid of it, for he was a very small boy. On his repeated visits to the country store he had sampled one after another its entire stock of cheap toys and unattractive candies, and at last seeing nothing new he invested his three cents in soda crackers, not because he was hungry, but because he "didn't know what else to buy." The quantities of inexpensive and useless finery exhibited in some of our large metropolitan stores is sufficient proof that there is a market for such things. If we were educated in spending, there would be small demand for cheap laces and embroideries that wear out with two or three washings, and that are never ornamental. This evil, however, will remedy itself, for as women learn how to earn they will show more wisdom in spending, and when they become mothers will teach the art to their children.

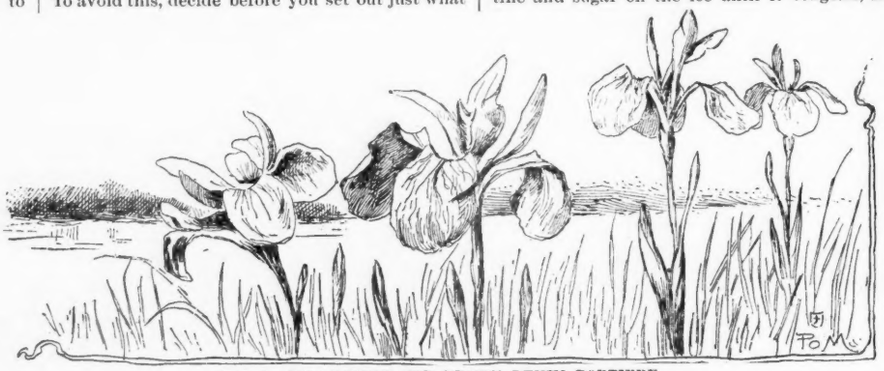


FIG. 2. IRIS DESIGN FOR BROWN DENIM PORTIERE.

For Lovers of the Strawberry.

Strawberry Russe.—Soak a tablesponful of gelatine for half an hour in enough cold water to cover it; then add two tablespoonfuls of boiling water, and stir until the gelatine is dissolved. Dip a mold in cold water and hold it in ice-water while filling it. Hull nice, ripe berries, dip each in the melted gelatine and press against the inside of the mold, to which the gelatine will cause them to adhere. You may line the mold entirely with the berries, or with alternate stripes of berries and lady-fingers. Fill the center with whipped cream, with two well-beaten whites of eggs and half a pound of sugar to each pint of cream. Set on ice until wanted.

Strawberry Compote.—Make a quart of table jelly, flavoring with orange juice or with the juice of crushed strawberries and a little lemon juice. Wet a mold in cold water, put in a layer of berries, then half an inch of gelatine; let this set, and add another layer of berries, and so on until the mold is full. Serve with whipped cream after it has hardened on the ice.

Strawberry Dumplings.—These may be made in one large dumpling, but are much daintier if made small. Make an ordinary biscuit dough, roll out less than a quarter of an inch in thickness; cut into cakes with a biscuit cutter; lay several berries in each; pinch together, and steam twenty minutes. They are nice served with a strawberry sauce, made by mashing a pint of berries and cooking them with a cup of sugar until it becomes sticky or ropy. Another sauce may be made by creaming one cup of butter with two of sugar, and working in strawberries, one or two at a time, mashing and beating until the sauce takes a nice color. Either of the above sauces or whipped cream is nice for strawberry dumplings, boiled strawberry pudding or shortcake.

Strawberry Bavarian Cream—Mash two and a half pounds of strawberries through a sieve fine enough to remove the seeds; add to this juice half a box of gelatine and six ounces of sugar. The gelatine must be first soaked for half an hour in half a cup of cold water, and then dissolved by being placed in a small vessel put inside another of boiling water. Place the mixture of juice, gelatine and sugar on the ice until it congeals, and then stir in a pint of whipped cream. Pour into a mold and keep in a cold place until ready to serve, when fresh strawberries are placed around the base of the mold after it is turned out.

Strawberry Souffle.—This is very nice for an evening party, and will repay the trouble of making. The quantity given is enough for twenty-five people. Soak a box of gelatine in a cup of cold water for half an hour; pour on half a pint of boiling water and stir over the fire until the gelatine is dissolved. Make a syrup by dissolving a pound and a half of sugar in a quart of strawberry juice; add the yelks of twelve eggs, whipped light and smooth; strain the gelatine into this; put into a freezer, and when frozen stir in quickly two quarts of whipped cream. Pack the freezer in ice again, and let it stand for two hours.

The Fireplace in Summer.

The grate in the modern house may be made to fill economically the void left by the disappearance of the old-fashioned fireplace. Have a hammered brass facing, two inches in width, placed about the chimney opening before the insertion of the grate. If it is not easily afforded, this bit of extravagance may be omitted and tiles inserted, or a plain brick facing, enameled a brilliant carmine, may be used. Between this border and the mantel, with its series of shelves (a pretty piece of furniture in itself), is a space of five inches, painted in clouded green, with touches of red. The hearth is of shaded green tiles, bordered with the pressed figures of old Egyptian or of Japanese style. The grate and fender may then be inserted, and, when the evenings begin to grow cool, the dancing firelight and brilliant clouds of sparks light not only the home of to-day, but the visionary home of the "Long Ago." Coal in grates is much more economical than wood in the old-fashioned fireplace, is much more cleanly, requires much less labor in replenishing, and consumes much less fuel.

When "the perfect days of June" have come, then the grate and mantel may be made nooks of beauty and of art by the deft dressing of apt fingers in the use of floral treasures. Gather the generous bloom of the buff and blue iris, and the glossy leaves of the Japan quince, Japonica, or lilac shrub, and fill a stone vase or pitcher with a generous, wide-spreading bouquet. Remove the grate and fill the fireplace with growing ferns and other forest wildings in boxes or pots of rich wood's mold. Place picturesque vases at each side of the mantel support, and fill them with long trailing vines cut from the sweet-scented honeysuckles,

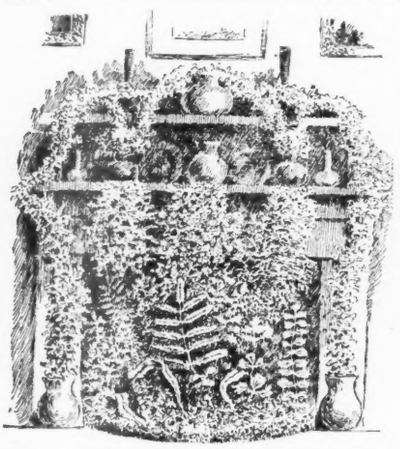


FIG. 1. SUMMER ADORNMENT OF FIREPLACE.

wild clematis, or other easily-procurable specimens, and train the vines up and around the shelves above. A large bunch of pale-blue iris and delicately trailing smilax, with vases of the buff iris on either side, may stand on the shelves above and mingle with the glossy leaves of the Japonica beneath.

This is a combination for the earlier summer days, but, as summer deepens, the changes are rung with peonies and peach-bloom, apple blossoms or roses, and dog-wood bloom, syringas, locust and bridal wreath, coral-honeysuckles, catalpas, and lilies, each in its season, golden-rod and autumn leaves, brakes and ferns later on, and we come to regard our fireplace and mantel in the light of an artistic exponent of personal ability of the artist in creating a thing of beauty.

My Lady's Waste-Paper Basket.

One whole pasteboard, a half yard of scarlet silesia, a yard of dress binding, a yard and a half of shaded green ribbon, some flowers, needle and thread, a basket of lichens scaled off in as large pieces as possible from old decaying logs or fence rails; with these and two hours of leisure a pair of deft hands can make this pretty, useful writing-desk appendage. Bring the ends of the pasteboard together and secure them in a flat seam. Cut a round piece to fit the bottom of this cylinder, sew it in and cover the seam with the binding. Now begin at the bottom, crowd closely together and sew securely, round after round of the lichens until the whole surface is thickly covered with them. If care has been taken to put them on smoothly, the result will reward the pains; the blending of color is beautiful. Make the lining, by seaming, and gathering with a little ruffle at the top, and sew it in, so that the merest edge will show. If you have saved from last fall's blooming some bunches of hardy hydrangeas, these, or some modest colored artificial flowers, secured by the ribbon tied in a loose bow at the side, will

FIG. 2. PRETTY WASTE BASKET.

make a very pretty ornament. It is a beautiful receptacle for tall grasses, if you should wish sometimes to use it as a bouquet receiver in a corner of the room.

Costume for Home Dressmakers.

The pretty Norfolk jacket herewith delineated forms part of a costume just finished by a lady who does all of her summer sewing that it is possible to do, before the spring hurry or summer heat arrives. The material employed is a pretty, light gingham checked with narrow lines of dark blue. It is trimmed on the plaits and other ornamental portions with cross-stitch work in Grecian pattern, as shown in Fig. 4, with heavy blue floss. The trimming costs but little money, and can be made by "the girls" for themselves. Two or three changes are made in the jacket pattern (the plain standard Norfolk, the favorite which so many home dressmakers own and use); to suit the prevailing mode the sleeve is made larger at the top by widening the upper half on each side above the elbow; the center of the front is cut away below the belt; and the neck is finished with a choker of very moderate width, into the upper edge of which a pointed turn-down collar is seamed. The belt and cuffs, as well as the lower edge of the collar, are cut straightway of the cloth, the border could not be worked upon them if they were not.

FIG. 3. NORFOLK JACKET.

The skirt made to accompany this jacket is very pretty, but so simple that a sketch of it is hardly

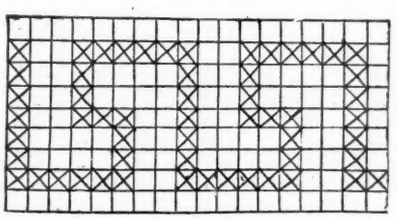


FIG. 4. DESIGN FOR CROSS-STITCH TRIMMING.

necessary. It is a full, round skirt,—plain, except at the left side of the front; there the left side of the front breadth (which falls free, overlapping another front breadth underneath it) has a straight edge which is finished from top to bottom with a hem, and is slightly draped at the top to lift it a little and produce a few carelessly falling folds in the front of the skirt, similar to the so-called "Greek apron." The cross-stitch border is worked straight down the free edge of the front breadth to the top of the skirt hem, where it turns and follows the hem across the front and right side breadth to the back; of course it might be carried all around the skirt with good effect, if desired. A pleasing variation is produced by making the front of the jacket, between the side plaits and the under front breadth, of plain dark blue. In that case the border of the front breadth should be carried straight to the bottom of the skirt, and a corresponding row should be carried down the front side of the left side breadth, which, instead of being seamed to the plain goods, should be folded under like a hem and overlapped.

A working design of the border is given. It is so simple and easily wrought that the most inexperienced will have no difficulty in performing the work without reference to the design after a few experiments. As the width of the border depends upon the size of the squares in the gingham, a little care is necessary if one intends making a jacket. The garment described was of quarter-inch check, which gives a border of just the right width for the plaits, belt, etc. Should a fine-checked gingham be chosen, use four squares in place of one. Should a coarser check be preferred, then single spaces only should be left between the different parts of the design; that is, instead of the two rows of checks, seen between all parts of the design given, only one should be allowed.

For Those Who Crochet.

Chain twenty-eight stitches.

First row: One treble in fifth stitch, one treble in next stitch, chain two, pass three, four treble in next; chain two, pass three, four treble in next,

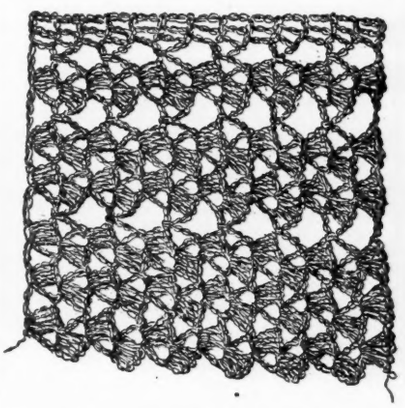


FIG. 5. HANDSOME CROCHETED LACE.

pass two, four treble in next; chain two, pass three, four treble in next, pass two, four treble in next, pass two, four treble in last; chain two, turn.

Second row: Four treble in right-hand space in last cluster of four treble, four treble in same space in each of the next two clusters; chain three, one double crochet over two chain, chain two; four treble in right-hand space in each of the next two clusters; chain three, one double crochet over two chain, chain two; four treble in right-hand space in next cluster; chain three, one double crochet over two chain, chain two; one treble between next two trebles, one treble in next space, one treble in second stitch of chain at top of row; chain three, turn.

Third row: One treble in first space, one treble in next space, chain two; four treble in right-hand space in first cluster; chain two, four treble in same place in each of the next two clusters; chain two, four treble in same place in each of the next three clusters; chain two, turn.

Fourth row: Same as the second.

After the beginning, the work is simply a repetition of the second and third rows. This lace is very pretty for garments, or for household purposes if made of coarse linen or other suitable material.

Making Crow Wings Useful.

Odd and pretty card racks can be made of crow, blue-jay, and partridge wings. Cut the wing at its second joint from the body of the bird. Spread it wide apart, or as you wish the wing when dry, and

tack upon a thin board until thoroughly dried. Mount and join the wings on an invisible bit of card-board, and finish with a knot of bright ribbon at the center of the base. A pair of glossy crow wings that I recently mounted in this way measure thirty inches from tip to tip, and the wide-spread glittering wings of a beautiful blue heron, that one of the men shot in the swamp, must have measured nearly twice as much.

Wash Dresses and Their Accessories.

Age can not wither nor fashion stale the popularity of the ever useful ginghams, and they decidedly take the leading place in the parade of wash dresses for the coming summer season. How fresh and pretty they are! Never so dainty and artistic before, it seems to me; while the American zephyrs modestly rival in design and coloring the old reliable and much more expensive Scotch fabric. Sateens are a trifle out of favor, on account of their wrinkling qualities, and the need of constant pressing to keep them presentable; but a sateen stripe appears on many of the newest ginghams and adds wonderfully to their beauty, particularly when the glossy band is black, resembling genuine satin. Thus, among the novelties are shown all the fashionable shades popular in cashmeres, closely reproduced in cotton goods, and an old rose, new pink, pale blue or sage green ground is strewn with darker chiné flowers and cross-barred most effectively with the sateen stripes. Sometimes irregular lines of black give the stylish dark note to pink, gray or green stripes, alternating with white stripes. The tartan and Stuart plaids are also as much in vogue as ever. Bordered ginghams are quite new, and come so wide that the width serves for the length of the skirt, the pointed border forming a trimming at the foot. These edgings vary in design, some being Scotch plaids and others displaying chiné vine patterns. Quiet and subdued but very refined looking gowns are made of the gray zephyrs and ginghams that have a "cram" effect; that is, two threads of color to one of white; while even more lady-like are the heliotrope and lilac shades that are as lovely in cotton as in wool or silk, and for which black or dark purple velvet is the approved decoration. The grays are generally combined with white. Plain zephyrs appear also in all the tones ranging from china blue to deepest indigo; and those with a white or ecru lace stripe, alternating with a solid one, will be fancied by young ladies for afternoon gowns.

As a rule, print dresses are made with a simple, straight, English skirt that is a boon to the laundress. The waists, however, are full and the mutton-leg or large coat sleeves very high on the shoulders. Bodices may be either lined or unlined, and are either round waists or a slightly pointed basque, plain in the back and full in front, with gros-grain or velvet ribbon following the edge all round and hanging in long loops and ends behind. A pretty style is to lay the fronts in tiny tucks from the neck almost to the bust, forming a half-yoke; while the fullness below is disposed in graceful folds that are secured on the shoulders and at the arm-holes. The high collar and deep cuffs are overlaid with embroidery or Irish point lace. Elaborately worked muslin is also applied to dressy cotton frocks as yokes, jacket fronts or insertions set in the skirt; and deep vandykes of embroidery, lace or cotton edging are largely used to form deep collars, cuffs and girdles. The fastenings of the waist must not be seen, it being closed with hooks and eyes or small buttons and loops beneath a strip of embroidery extending down the middle of the front; or under a Spanish jacket on the left side. Plaid ginghams are cut bias throughout and made with a round body, perfectly plain on the shoulders and slightly gathered at the belt. With this style of bodice a waist ribbon is worn, fastened in front with a long, narrow, bent buckle that is shaped to the figure. An old fashion revived for very plain gingham skirts is to trim them with several rows of narrow white braid put on just their width apart, and encircling the whole skirt.

Next to ginghams, the choice in cotton fabrics is divided between the percales and the soft Indian dimities, which latter remind us of the old gowns in our grandmothers' garrets. The percales are mostly in tapestry designs, and are intended to look as though the flowers, stripes and scrolls were embroidered on, each stitch being distinctly visible. The dimities are thinner, finer and have thick cords at intervals. The groundwork is white, and it is scattered over with gay sprigs, dots or wee blossoms. Those in mourning will like a somewhat similar material known as a lawn. This has wide black stripes on a white ground edged with an open lace pattern.

Tennis flannels and the washable silks must now be included among wash dresses. They are nearly always striped and are largely used for outing suits, house waists and for blouses to be worn traveling and when enjoying outdoor sports. The blouses are rather masculine in shape, being made with a shallow yoke, like a man's shirt, and a wide box plait down the front. The loose shirt sleeves end in wristbands, and the neck is finished by a straight, turned-down collar. The blouse is cut long enough to tuck below the skirt belt, but is also held in shape by a drawing-string at the waist line.

Thin silk house waists are considered particularly stylish when decorated with smocking, and this is done by hand, with either black or white embroidery silk—whichever forms the most decided contrast. Others, however, are trimmed with a ruffle of lace or silk, running up from the belt in front and around the shoulders in fichu fashion. Another style is to shape the bodice by lengthwise tucks, extending high above the waist line, both in the back and front.

Plaid stockings are worn with plaid frocks, but they are extremely unserviceable, as they quickly fade with washing. It is always considered smart to have the hose match the costume. When this can not be managed, black stockings should still be selected.

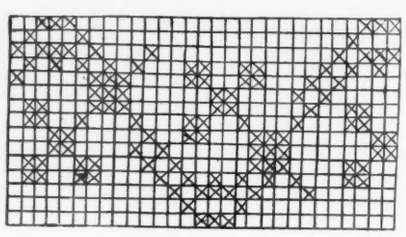
Walking shoes, it should be said, again display the old, uncomfortable pointed toes. They are entirely of patent leather, or have patent leather tips.

Light jackets with vests and short cloth capes will both be worn with thin dresses, and a fur, plush or velvet shoulder cape on a cool day in summer is considered the proper thing. The latest cloth capes are made of accordion plaits, or with two or three frills of pinked cloth falling from a pointed yoke below a high, Medicis collar.

Gloves are perfectly plain on the back, all stitching being now passé; and there is a report that fewer buttons are to be used for fastening, the number for street gloves to be reduced to one or two.

Cross-Stitch Border.

The liking for cross-stitch work on cross-barred white or gingham aprons and dresses seems unabated, and it is not strange when one considers the rapidity with which it may be accomplished and the pretty results obtained. The border illustrated is suitable for any garment requiring a border of that width. By leaving off the two rows of squares on each edge, a narrower and more compact border may be produced; one much wider, and very pretty, may be made by repeating



DESIGN FOR BORDER.

the pattern, working one row above the other, so that the lower points of the upper pattern project a little way into the lower pattern about midway between the upper points. The broad band thus produced makes a pretty trimming for the full skirts of children's dresses. Of course the width of any pattern depends upon the size of the squares in the gingham or other material used; if they are very small-checked with a cord or pencil-stripe, four of the little checks are sometimes taken for one square. White, red or indigo-blue floss, embroidery cotton, or even, for some uses, fine knitting cotton are the materials usually employed. The size of the thread should correspond with the size of the squares and the quality of the goods. Wash embroidery silk is very handsome on fine, nice white or cream-colored goods checked with tiny ribs or cords.

Culinary Wisdom.

Rice Curry.—In hot climates curry is much used, and a curry of some kind is often a pleasant and appetizing change in summer, when appetites so often fail. Steam some rice; fry a minced onion in a little butter until it turns red; add a teaspoonful of curry (for a quarter of a pound of rice) dissolved in half a cup of stock or gravy; boil up once and pour over the rice. This is a delightful accompaniment to roast veal.

Old-Fashioned Pop-Overs.—Beat the whites and yelks of two eggs separately. Add the yelks to two cups of milk, and stir in this two cups of flour sifted with a teaspoonful of baking powder and one of salt; add the whites and beat hard. Pour into greased cups, or muffin rings which have been previously heated. Do not have them more than half full, as they puff up to almost three times the size. Bake in a hot oven and eat at once, as they fall quickly.

Beef's Tongue.—Boil a nice, fresh ox tongue until tender in salt and water. Remove the skin, make incisions in the flesh and fill with a stuffing made of two hard boiled eggs minced finely with a tablespoonful of onion, a few sprigs each of parsley and celery and a level spoonful of ground black pepper. Bake for thirty minutes in a moderate oven, basting with a little melted butter. Unless the tongue has been boiled in the stock-pot, utilize the water in which it was cooked for a soup.

Clam Soup.—Put the juice from twenty-five large cherrystone clams over the fire, and when it comes to a boil, skim it carefully. Add three pints of hot water, and the chopped clams. Let them simmer three minutes; thicken with two heaping tablespoonfuls of flour smoothly mixed with a gill of cold milk; when this simmers add two tablespoonfuls of butter and a pint of hot milk. Season with salt and pepper, and while boilng pouring into the tureen very slowly over two beaten eggs. This is a most delicious soup.

Sardine Salad.—Open a small box of sardines; remove the skin and bones and cut them fine. Squeeze over them the juice of a lemon; season with salt and pepper and mound up in the middle of a dish. Next put a circle of chopped hard boiled eggs, three in number; then a circle of dice of cold boiled potatoes, then of small, inner leaves of lettuce. Garnish with olives and capers, if you have them, but the salad is very good without them. Pour over it at the moment of serving a plain French dressing, a mayonnaise dressing, or some of Durkee's salad dressing.

Easter Pan Cakes.—Beat three eggs very light; add one cup of milk, then three of flour, a little salt and enough milk to thin the batter until it is about like cream. It must be perfectly smooth; beat for five minutes. Then put a lump of butter the size of a hickory nut in a frying pan; shake about until it melts, and when very hot pour in a large spoonful of the batter, moving the pan so as to allow it to run over the surface evenly. When done on one side cook on the other, transfer to a hot plate and serve with a sauce or buttered and sprinkled with sugar and cinnamon, or with butter and jelly.

Boiled Potatoes.—It must be owing to carelessness that one so seldom sees a properly-boiled potato. The process is a simple one, but it is one of the things that must be done "just so." At this time of the year they will require to be pared; let them lie in salted cold water for fifteen minutes, cover with fresh cold water, and set the saucepan where it will boil soon and rapidly. As soon as the potatoes will pierce easily with a fork, drain off the water—drain it *entirely* off. Sprinkle them with salt, lay over a folded towel, and put on the cover. In five minutes shake the saucepan violently for a minute or two, and your potatoes will be like fluffy snowballs.

Epicurean Beefsteak.—This recipe is from a famous English cook. Broil a good tender steak, lay on a hot plate and pour over it a sauce made as follows: Beat up the yelk of a raw egg. Add a gill of milk, a tablespoonful of melted butter and an even tablespoonful of flour. Stir until the latter is smoothly mixed. Then put into a saucepan and stir constantly until the boiling point is reached, but on no account allow it to boil. Add a half teaspoonful of minced parsley, a little salt and a teaspoonful of tarrago vinegar or tomato sauce to each gill of the sauce. Stir all the time the vinegar is being added, or the sauce will break and curdle, which would spoil it.

Daffy, the Runaway.

IDA M. BARNES.

Daffy Pringle was a little girl who lived in the country long ago when the country was wild and new, with an occasional bear or wildcat in the woods, just to make things interesting. But Daffy was a brave little girl and went to school every day, although she had to go half a mile along a lonely, uninhabited road.

One summer morning, while mamma Pringle was smoothing the stubby flaxen hair, and tying on Daffy's pretty new pink calico apron, Mr. Pringle came in, saying, "There's a bear over in Moss's swamp. Dillon's folks saw him this morning." This swamp was not far from the Pringle home.

Mrs. Pringle did not faint nor shriek. She simply finished "bowing" the apron strings, and said:

"Had'nt you better stay home from school, today, Daffy?"

"O, no! Mother," Daffy responded. "I'm not one bit afraid of the bear, and I almost know Dora and Kate are waiting for me now at the Corners."

So Daffy had her way, and trudged off to school, dividing her thoughts between the pink apron and the bear.

Sure enough, at the Corners her two little mates were awaiting her, each with a bear-story to tell. The bear had been among her father's sheep, Dora said, and Kate's big brother had shot at him, but without avail.

The girls walked on toward school, still discussing the bear. Suddenly Daffy exclaimed,

"Let's go over to the swamp, girls, and find the bear." Dora instantly agreed, and a little persuasion made Kate a party to the plan. Accordingly the naughty little trio faced about and made their way "cross lots" to the swamp, carefully keeping out of range of Daffy's home.

Such a time as they had in the swamp! Daffy enjoined silence on her followers, lest they should "scare the bear." But the drawback of speaking in whispers was all that marred their fun. They poked sticks into every brush heap; they peered into every hollow stump and tree. Of course they had not been in the swamp five minutes when there was not a dry foot in the company.

The swamp, however, failed to disclose the bear, and at length the attractions of fruitless bear-hunting began to pall. Daffy sat down on a mossy log and looked at her apron. It had escaped wonderfully and looked quite respectably clean, considering the arduous chase in which it had been worn. Dora looked up at the sun, which was nearly straight overhead. "It 's 'most noon," she said, "and we ain't going to find that old bear. Let 's go back to school."

"*I'm* going home," announced Daffy, calmly. "Mother 's going to have beef soup for dinner. So I 'll go home, and come to school this afternoon, may be."

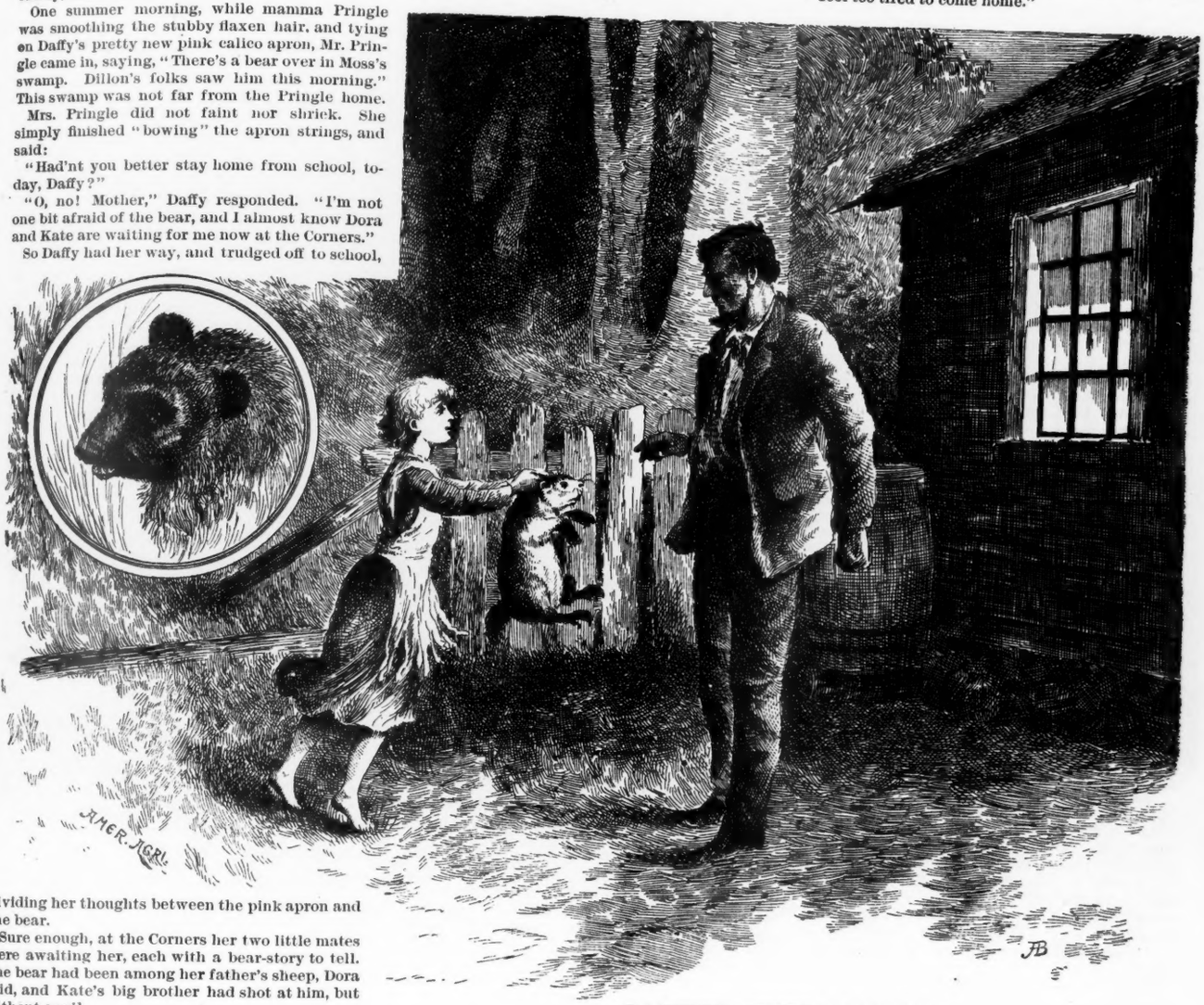
Accordingly the girls separated, Dora and Kate to go to school, while Daffy, dinner pail in hand, took a short cut across the swamp to her home. She heard some shouting and the report of a gun in the distance, but like the plucky little girl that she was, kept on her way, and walked into the Pringle residence just as Mrs. Pringle was taking up the steaming beef soup,

"That must be what I heard when I came through the swamp," broke in Daffy, eagerly.

It was her father's turn to look astonished at this remark. When he had heard the whole story, he gave his little daughter a serious "talking-to," but between amusement at her fearlessness, and gratitude that she had been saved from any real danger, his admonitions were not very severe. One little drop twinkled in Daffy's blue eyes, but it did not fall on her freckled cheek, and she ate her beef soup with a light heart and a ravenous appetite.

Dinner over, and the dishes washed, Daffy begged to go to school. It wasn't necessary to have an "excuse" for absence from school in those old-fashioned days, and Daffy felt lonesome. "*Please* let me go, Mother," she urged.

Mrs. Pringle finally consented, saying, "You can go to Grandma Pringle's and stay all night if you feel too tired to come home."



DAFFY'S EXPLANATION.

The keen motherly eye passed over the clean apron, and fell directly on the soaked, muddy shoes. "Why, Daffy Pringle, where *have* you been?" she said.

Daffy's naughtiness never took the form of deceit; so she answered, quite unconcernedly, "I've been over in the swamp, hunting that bear. Dora and Kate went, too, and we had lots of fun, but we didn't find the bear, and I'm awful hungry."

"Well, if I *ever!*"

Mrs. Pringle sat down in astonishment, but the dinner needed attention and she was obliged to get up again.

Both she and Daffy were somewhat surprised a few minutes later, when Mr. Pringle came in to dinner, bringing the news that the bear had just been killed; he was a very large creature, and had attacked the hunters and killed two of the dogs.

Daffy joyfully agreed, and once more set out for school. The pink apron looked bright and clean, and Daffy had on her Sunday shoes, and looked an altogether trim and decorous little maiden as she walked into school.

The afternoon passed pleasantly, and after school Daffy went as agreed, to stay all night with her grandmother. She was received with a hearty welcome, and had a lovely china bowl with rosebuds on it, out of which to eat her supper of bread and milk.

Twilight came on, that lonesome time when the frogs sing and the crickets chirp. The shadows grew deeper, the moon came out, and Daffy pulled off her shoes and stockings preparatory to going to bed. Her green gingham sun bonnet was hung on a nail for the night.

Nine o'clock. Grandma was out in the kitchen

"puttering round"; Grandpa was peacefully smoking in the sitting-room. Daffy knew just where she should sleep, in the little south bedroom where the picture of "Burns and his Highland Mary" was hung. But she thought she would run out to the gate, and take a look around before going to bed. So out she ran, barefooted, and stood at the gate in the summer night.

Right across the road was what the people of that day called "a piece of woods." Three-quarters of a mile through it, Daffy knew, was her own home, almost in a straight line.

A sudden wave of homesickness swept across the little girl's heart. She fervently wished she had gone home from school. Then, regardless of the little bare feet and the uncovered flaxen head, Daffy ran across the road and plunged into the woods. She was not a bit afraid. To be sure, she had never been there in the night, but she knew every foot of the way by daylight, and there was a feeling of warmth and security in the very air. The moon threw all the light that it could among the trees, and Daffy's bare feet felt the soft moss like a carpet under them. She ran on, thinking how surprised her father would be when she came in and had not a thought of poor Grandma Pringle's anxiety for her.

Half way through the woods there was a fence, and Daffy knew just the trick of slipping through between two curved rails. As she did this, she saw close beside her on the ground a pair of large, shining eyes. Her first thought was that there was an owl; her second thought was to capture it.

She made a dive for the supposed owl, and instantly realized that her fingers had come in contact, not with feathers but with hair. However, having secured a tolerably firm grip of the creature, she dared not let go. Neither would she turn back. The animal uttered no sound, but it squirmed dreadfully in its captor's little hands. On she hurried, through the woods, holding the unknown prize at arm's length, for it was evidently provided with claws. Every little while, in spite of her precautions, the claws would catch in her apron and zip-p-p! the firm, new calico would go. Fortunately, she had the creature by the back of the neck, but it was very heavy, and her strength was sorely tried before she got through the woods. She tried in vain to think what kind of animal she was carrying, but was forced to give up the problem. The friendly moon was hidden by clouds, but Daffy stumbled on, and at last came out on the clearing back of her home.

There were some bars between her and the house, and she felt that she had done all she was equal to. She called her father loudly, and at the second call he stepped out of the back door. Then ensued this conversation:

"Who is it?"

"It's me, Daffy. Come and let down the bars."

"Let them down, yourself."

"I can't, I've got something."

"What is it?"

"I don't know."

"Where did you get it?"

"In the woods. Come and let down the bars."

Thus adjured, the wondering Mr. Pringle let down the bars and ushered his little daughter into the light which shone from the rear windows of the house. Then was revealed the fact that she carried, by the nape of the neck, a huge, gray woodchuck, desperately struggling and clawing, sometimes the air, sometimes the remains of the pink calico apron, which looked more like carpet rags than anything else.

I don't know what was said or done to Daffy, and I don't know what Grandma Pringle did when she looked in vain for her little granddaughter. Neither do I know what became of the venerable woodchuck. But I *do* know that this is a true story, for it was Daffy herself who told it to me.

Prince and Pauper.

MARTHA CLARK RANKIN.

Prince was a great black Newfoundland dog, the pet of our home. One day there came to the house a stray little white kitten. It looked so hungry and forlorn that we took it in and called it Pauper. We expected Prince would tease it; but, to our surprise, he seemed fond of it from the first, and the two soon became the warmest of friends. When Prince lay down for a nap, Pauper would curl herself up on his black fur, and sleep as peacefully as though she were with her own mother. A very pretty picture they made, for Pauper grew sleek and fat, and looked like a snowball against shaggy, black Prince. They always ate together, and Prince offered his little friend the best of everything. They had the jolliest times playing, and though Prince sometimes seemed rather rough in his frolics, he never was known to hurt Pauper. One of his favorite plays was to take her by the nape of the neck, just as an old cat carries kittens, and toss her up in the air. She always came down on her feet, and ran to the dog, as if teasing him to do it again.

One day, a kind-hearted lady passing the yard saw the dog and cat playing in this way. She thought it very cruel, and rang the door-bell to know if it was our dog that was worrying a poor little kitten. When we explained to her that they were the best of friends, and were at play, she did not at first believe it. But, after watching them longer, she was convinced that the cat enjoyed it as much as the dog. Then she went contentedly away, leaving them to their sport.

The Tent-Dwellers' Children.

JAMES K. REEVE.

In many a cemetery, I have examined the chiseled record of the lives and deaths of Gypsies, but never have I seen the place of their birth recorded, while it is often stated that the place of death was "in his wagon." From the open fold of the curtain of this wagon, which is so closely connected with their whole lives, or from the raised flap of the tent that is pitched near by, these children first see the light of day. Sometimes they look out upon quiet country lanes; sometimes upon the outskirts of bustling cities; oftener into the leafy stillness of the woods or upon the banks of bubbling brooks. From the hour that they first tumble upon the green grass, their lives are mainly spent in the companionship of things which, like Topsy, "just growed."

"In any wood our dwelling place,"

is a favorite line of theirs which is suggestive of the sort of childhood they have known. Their playground is as wide as the forest, and from infancy their ears are familiar with its sounds, their eyes with its sights. They know where the best nuts and berries may be found; they learn how to fish, to trap and to hunt. They are first warmed at fires made from its dead and fallen branches; they prepare and cook their game before the same crackling blaze; and they bathe (if they ever *do* bathe) in the cool creeks that run within the shadow of the woods. From constant exposure to wind and sun their cheeks get the same russet and ruddy hues that ripe fruits have in October, and these colors never change. Old men have the same bright glow in the skin as boys of ten, and they grow no darker under the burning skies of the South than where they bloom for half the year among the snow-covered fields of the North.

"A homeless child" we think of as a thing of city streets—poor, ragged, hungry, uncared-for. The words form no part of our conception of hearty, wholesome, country life. But these are a tribe of homeless children, at least of children without a home, if by home we mean four walls of wood or brick; and they are the children, too, of a tribe of men and women who have grown from childhood without a home, except such as the wagon and the tent afford. They are a unique and interesting feature of country life. They are neither poor, nor hungry, and not often ragged—unless it be from carelessness, or from an instinct to be hampered as little as possible with any of the needless harness that civilization imposes. In southern countries the little ones are allowed to run, almost the year through, with very little clothing, and if they sometimes grumble at the cold in the winter the mother will take the strap with, "Here, sonny, put that on to keep the cold out." But on account of their hardy, out-of-door lives, these children really become insensible, to a wonderful degree, to heat and cold, storms and exposure, and to the lack of the ordinary comforts that are indispensable to children who live in houses. While they are given a sort of rough training and care by their parents, they have to learn to look out for themselves in most things from a very early age. Thus they acquire a surprising readiness both of body and mind, which helps to serve their own interest when, in later years, comes the contest of wits between themselves and the *Gorgio*, or Gentile.

The education of a Gypsy child is a curious affair, and has little to do with books and schools. It is mainly attended to by the older women of the family. The mother begins, as soon as the child can comprehend the simplest idea, some parts of the history of their people which is embraced in that which they call "their wonderful story." They aim to excite the imagination and veneration of the child by tales of their ancient descent; of the marvelous power and glory of "their own people," among whom they say were the Pharaohs, and Joseph in Egypt. Their own language is taught them before any other, and they are told to keep it secret, using it only among themselves, so that they may be able to talk with one another in a language that the hated *Gorgio* can not understand. They are told that they are despised simply because they are Gypsies, and thus they come to look upon others as their natural prey, to be beaten in the best way possible in all dealings between them.

Then the older women, themselves looking like witches, teach the girls the art of palmistry (how to tell fortunes and to prophecy by the lines of the hand), and the value of amulets and charms as remedies against mischief and evil fortunes, or as an aid in securing good fortune, and in compelling wishes to come true. They also pretend to interpret dreams, and in every way aim to instill a sense of the weird and supernatural, in which perhaps they once believed themselves.

The boys are sometimes taught a trade, usually that of tinker, or mender of pots and pans. This occupation was at one time almost universal among them, so that they received the name of tinkers or tinklers (from their custom of making a tinkling noise by striking on metal to proclaim their trade), by which they are yet known in some countries. They also learn to ride, and as they are among horses from infancy quickly come to know a great deal about them—how to handle them, and the secrets of "doctoring" so that poor, worn-out animals may for a little time appear to be in good condition, and so be sold at good prices to unsuspecting purchasers.

There is perhaps as much of child nature to be found in Gypsy tents as anywhere else. They have their amusements,—games, toys, songs, dances,—like other children. Yet it has been well said that these little people are odd compounds of pluck and shyness, of cheek and courtesy, of thoughtlessness and meditation. Their natural childishness is overhung by the somberness of their early teaching, yet if you make friends with them, they laugh as loudly as any, and the boys will soon grow confidential and tell you how the pony yonder is theirs; the father has let them buy it with the bits of money they have saved, and they hope to sell it by and by for so much more—a change in values that may excite the wonder of one not used to Gypsy traders and their methods. The girls have their dolls, sometimes old, begrimed and broken, that they will proudly tell you belonged to the mother or grandmother before them; for in their regard for old-fashioned things this ancient race is very modern indeed. With the boys such muscle-developing games are in favor as throwing the sledge-hammer, pitching quoits, and playing golf, or tipcat, a game resembling that which American boys know as "shinny," and which readers of the life of Bunyan will remember as being one of his amusements. Personal strength is much prized among them, and the boy who can throw the hammer furthest, or is the best wrestler or jumper, is as much a hero as he would be among boys of any other class. As they grow older, music and dancing form a chief amusement for all, when any number of them are together.

The Gypsies often gather about country fairs, and there the girls sell trinkets, while the boys may be found around the horse stables, watching for any little errand or task by which they may earn a few pennies, while at the same time being around their favorites, the horses. The Gypsy boy, however, has not the same love for the horse as a friend and a companion that the Arab or the Indian has, but it is merely a question with him of how little he can be bought for, or how much he may be sold for.

As some of these people are now acquiring considerable wealth, their children enjoy many of the privileges that come to those of other classes through the power of money. They dress well, but usually in bright colors, and in a style peculiarly their own. They have also a special fondness for jewelry, and wear that of the most showy sort. Not long ago I ran across a traveling band,

the family of a chief or king of the Gypsies, who had among their possessions a pair of fine Shetland ponies, and a handsome little phaeton which the sturdy, brown-cheeked little princes and princesses seemed to enjoy immensely.

Their roving habits of life are against the acquirement of any definite or systematic education, even were the effort made. But if they made use of their opportunities, they could acquire an excellent knowledge of the local geography of the country in which they live. They travel almost incessantly, except for the temporary stops at fairs or near towns for trading, and go north, south, east and west, and as they travel always by wagon they become acquainted with the country as travelers by rail never can.

As for "camping out," an amusement that young people everywhere are fond of, it is the normal condition with them. In pleasant weather they are content to sleep anywhere, on the soft grass, or upon a bed of leaves or pine boughs. In cold or inclement weather they are sheltered by a tent, or nestle together in the wagon, which is always so furnished as to be easily converted into a comfortable bedroom. Their meals are taken out-of-doors, where they sit cross-legged about the camp-fire, and consist of such provisions as can be easily carried with them, or may be procured from the

LIFE AMONG THE GYPSIES.

woods and the streams. Such a life, and such simple, hearty food, the open air, and "early to bed and early to rise" (for unless you are up long before the sun you can hardly find a Gypsy camp that is not astir before you), go far toward making strong muscles and a hardy constitution. With these should go a light and happy disposition. But this is not always the case. They are taught to think upon the history of their race and its peculiar position among the nations of the earth, a race of wanderers without a land to call their own, until this idea tinges with a cast of sadness the whole Gypsy character.

There is a void, that nothing else can fill, when a boy standing even upon the very bit of soil where he was born, can not say

"This is my *own*, my native land."

He feels the want of a bond of sympathy between himself and the land, and the people about him, and Matthew Arnold was so impressed by this thought that he penned the following beautiful questioning verse, after talking with a Gypsy child upon a brook-side in England:

"Who taught this pleading to unpracticed eyes?
Who hid such import in an infant's gloom?
Who lent thee, child, this meditative gaze?
Who massed round that slight brow the cloud of doom?"

Five Prizes for Puzzle-Solvers.

Five prizes, worth ten dollars, are offered for the five best lists of answers to the puzzles published below. The prizes will be forwarded in each case free of expense to those who win them.

For the best list of answers, a Family Tool Chest, containing thirty-two tools, with a handsome rosewood tool-holder handle, the whole packed in a neat, strong box. This is the most useful prize we have yet offered. It is well worth the four dollars you would have to pay if you were to buy it.

For the second best list of answers a Florence toilet-set, consisting of Florence hair-brush, mirror and comb, all of fine quality, in a beautiful case, covered with plush and satin lined; cash value, two dollars.

For the third best list of answers, a gentleman's shaving-set—a handsome case, divided into compartments, and containing a fine concave razor, a strop, a shaving-brush, a comb, and a cake of shaving-soap—all first-class goods. If this prize should be won by a young lady, she can make her father, brother, or sweetheart happy by presenting it to one of them. Its value is two dollars.

For the fourth best list of answers, a set of mathematical or drawing instruments, fifteen in number, and worth one dollar.

For the fifth best list of answers, a celluloid manicure set, in a plush, satin-lined case; also worth one dollar.

Answers must be mailed on or before the 20th of this month, addressed to Puzzle Editor AMERICAN AGRICULTURIST, Lafayette Place, New York.

43. FOUR BURIED CITIES.

1. On the little isle of Atmos, cowards are not to be found.
2. Poor apes! They have not been fed to-day.
3. This coachman will drive nicely, I think.
4. "Mad" is only another word for "crazy."

44. WORD SQUARE.

A young animal; a mixture; a beast of prey; a pure sound.

45. NUMERICAL ENIGMA.

At this time of year a 1, 2, 3, 4, 5, 6, 7, 8, 9 may often be seen to 7, 8, 2, 4, 3, 5, 6 1, 9.

46. DECAPITATION.

My whole is an elevation. Behead me and I am an odor; behead me again and you will doubtless find me in your pocket.

47. DROP-LETTER PUZZLE.

—e—o—h—b—a—h. (The answer is a proper name, which may be found in the Bible.)

48. GEOGRAPHICAL WORD SQUARE.

A town in Africa; a river in the German empire; a town in Spain; a river in Italy.

49. WORD PUZZLE.

From a word of five letters take away two letters and leave ten.

50. SUBTRACTION.

In the following example letters are used for figures upon a fixed plan; for instance, if S stands for three in one case, it stands for 3 in every case. Required, to give the mathematical answer to the problem:

T N M C J L C G B
F J A B M L T N
C T J T T M F J B

51. MORE BOOKS FROM THE PUZZLERS' LIBRARY.

1. An old tar.
2. A match.
3. A child with a wig on.
4. A brilliant member of the alphabet.
5. John, said his sister, what plaything is this? He answered: No other——

52. SOME ENGLISH POETS.

1. Three-fourths of a machine, and a weight.
2. A metal and its artificer.
3. The Gypsy's home, and something noisy but useful.
4. A pronoun feminine, and a part of the farmer's wealth.
5. A domestic animal and half an individual.
6. Idle things and true merit.
7. What all have been, or still are.
8. To use cruelly, and to fasten together.
9. A pronoun masculine and an improper plural.
10. Two-fifths of an amphibious creature and a path.

ANSWERS TO THE APRIL PUZZLES.

29. Garb, grab, brag.
30. Assisi (pronounced Es-see-see).
31. Consolidated.
32. Washingtub, 25,143 1-26.

33.
I S L E T
S M I L E
L I S L E
E L L E N
T E E N S

34. Divisive. (Several other words "fill the bill" equally well.)

35. The report of a cannon.

36. 1, Paradise Lost; 2, Paradise Regained; 3, Bitter-sweet; 4, Barnes' Notes; 5, Hamlet; 6, Sketchbook; 7, Snowbound; 8, Jane Eyre.

WINNERS OF THE APRIL PRIZES.

The first prize for the best list of answers to the April puzzles goes to B. Tuzo, 46 Exchange Place (Room 25), New York; the second to Margaret Voorhees, Spottsylvania C. H., Va.; the third to Lorette C. Ludden, Canton Point, Me.

FROM NEAR AND FAR.

A Homesteader's First Crop.

When one farms on land that has never before been turned up by the plow, he does not expect the same results as from old ground. When the sod is first turned over, it lies in long strips, that can not possibly be broken up or mellowed,—not at first, I mean.

But just put in the corn and cane, the pumpkins and squash—and don't forget the watermelons or the muskmelons—and then leave it to nature and time. If there are no hot winds, and the rain comes at the right time, there will be at least half a crop of corn, and perhaps full crops of the other things. Watermelons seem to be quite at home in this part of Kansas, and I would hardly like to say how many of those we ate during our first year in this place. We even raised a crop of potatoes from the sod—but find that the potato has many enemies. When the vines made their first appearance above ground, and were looking as well as possible, we got a hailstorm that lasted about twenty minutes. When it was over, every tender leaf in the field and garden was nicked off; peas, and onions, and turnips, and beets. But in a little while they put out leaves again, and the potatoes, in particular, looked very well, when along came a black bug,—or, to speak more correctly, a few thousand came along,—and these set to, to eat off the potato leaves with such energy that, if we had not been energetic too, the potato would have had a short life. These bugs have a small head and shoulders, and something that goes for hands; the rest of their anatomy consists of a long oval-shaped sack to stuff the leaves into. The vim they displayed in the stuffing process was remarkable. The whole family had to get out to fight them. We took each a tomato-can and knocked them off the vines into it, and then attended to the killing when we had them canned. In little more than a week they were all gone. Then the old-style Colorado beetle commenced operations. When he comes, he comes to stay as long as the potato, so you have to kill him or he will kill the potato. Then another bug put in an appearance, about the size of a grain of oats, but gray in color. This fellow has increased much lately, and now makes as great a pest as any of them. In July we had a long spell of hot and dry weather, and the potato had to struggle for existence then. All things considered, I think the potato had a hard time of it, and needs encouragement. But I want to tell you about the soil. Hardly any weeds grow with the first crop, which is just as well, for you can't cultivate it. Next year, we turn back the sod, which is pretty well rotted, and, in turning it, take up an inch or so of the soil. There are plenty of weeds at this stage. The third year, the soil can be plowed and harrowed as fine as a garden, and you can nowhere find more desirable land; only, we want more moisture. Enough rain falls during the year, but what is needed is a wise head and a strong hand to store it when it falls, and set it free when it is most needed. Everybody here agrees in thinking that when the soil is broken up, so that the rain we do get can sink into the ground instead of running off into the draws, we will get seasonable weather for all kinds of crops. The great trouble with all new farms in the West is that we are mostly confined to one or two staple crops—corn and wheat—as sources of revenue.

MRS. I. B. RUSSEL, Sheridan Co., Kansas.

The Seasons in Western Ontario.

Winter, according to the almanac, begins in November, but the real, genuine, old-fashioned winter, including Jack Frost and the fleecy snow, begins when it gets ready. If the summer months of the past year were somewhat peculiar, the winter which followed was more so. The month of September was so dry that it was with difficulty the wheat was got in. October was the same, so that at the first of November much of the wheat had not sprouted. Farmers despaired of getting their fall plowing done, but through November and December we had copious rains, so the plowing was finally done. The ground was not frozen more than three inches deep until after Christmas, and fall wheat grew right along. This question has struck me very forcibly, "will a winter growth on old land give a full crop?" In my experience I have never known it to do so. On new land it will. But when on old land it failed to make a proper growth in the fall, even though it might grow all winter, it almost invariably rusted or blighted. In the south part of this county immense quantities of elm is banked every winter, and in the spring floated down the small rivers and creeks, to be manufactured into staves. This timber which, a few years ago was almost valueless, is now worth from three to five dollars per thousand on the bank, price depending on location. The past winter was against a large output, and those who depended on that as a source of revenue looked rather glum when, instead of a foot of snow through the winter, they saw on the roads about that much mud.

REV. JOHN MORRISON, Lambton Co., Ont.

Coaching in Mexico.

Riding all forenoon in a rickety, creaking Mexican stage-coach, with no companions save four Mexicans, including the driver, in a wild and lonesome table-land in Northwestern Tamaulipas, was perhaps the most lonesome day of my existence. My business was to examine certain Government lands in this, one of the most promising States of the sister republic. Our progress was slow and tedious, for the Mexican promise of four horses had dwindled to one pair of diminutive, chafed, collar-galled Mexican mules.

The elements themselves conspired against our progress, for we left Nuevo Laredo at the end of a week's wet weather, and the road—where there was a road—was heavy and muddy, and the arroyas or dry water-courses in many instances had to be forded. Early in the day we became practically stalled, for, the passengers having dismounted, the discouraged mules were hardly able to drag the wagon through the mud. Fortunately, we reached the night-camp of a train of ox-carts, hauling freight. Immense, rudely-constructed carts they were, heavily laden, with three yoke of oxen attached by the horns to each cart, and controlled by the driver riding alongside on horseback, with a steel-pointed goad. The train was waiting for the sun to make the road passable. But our stage, pretending to run on a time schedule, could not wait, and our enterprising driver impressed a couple of the train-boys to our assistance. A lariat was hitched to the stage-pole, and the extreme end to the saddle-horn of our extra horses, and we started; not gently, but with a chorus of wild shouts, a cruel use of Mexican spur and quirt, at a full run, regardless of deep mud or dangerous holes, reckless of the life or limbs of at least one badly frightened passsenger. Though I had sincerely welcomed the assistance at the beginning, in the end I was relieved to see our leaders loosen their lariats and, with an "Adios, Senors!" ride back to the ox-train, leaving us to pursue our way, if more slowly, yet with greater personal comfort and safety.

A table-land in this portion of Mexico is a vast, almost unbroken sea of cactus and mesquite. To stray from the beaten path is to become hopelessly lost. In these broad, densely-covered plains, there is little of the larger animal life, but immense quantities of rabbits and birds. At eleven in the forenoon we came upon an immense flock of goats lying in the shade of the bushes at the roadside, an indication of some sort of civilization. At last, with the sun beating down on us pitilessly, worn out, hungry, thirsty, and half choked with dust, we reached our driver's accustomed halting-place.

In this picturesque country, one of the most picturesque objects is the ranch. Oftentimes it is but a thatched roof, supported at a convenient distance from the ground by poles, and with the most meager furniture. Again they are extensive, with outside walls of mesquite branches, mud-plastered, and with every appearance of comfort, surrounded by a high and close wall of mesquite branches. They are never more than one story high, and always with an earthen floor. The rich, full tones of a grand piano, in perfect tune and well played, coming from one of these ranches, was a sufficient surprise during one day's ride in this portion of Mexico, but this was at a ranch of the better class. I have seen others that were the common playing-ground of the numerous children, goats, dogs and pigs. At the ranch which was to provide us with rest and refreshment, our host was the typical Mexican, dressed in the heavy sombrero, light shirt, and pantaloons, with the inevitable corn-shuck cigarette, always smoked with a few puffs and replaced with another.

The cigarette habit is a Mexican habit; men and women alike smoke cigarettes, made of coarse tobacco, with corn-husk wrapper. Our dinner, cooked and consumed in the open air, was simplicity itself. A long line strung between two poles, filled with what at first I had believed to be dirty rags, furnished the meat, for in this climate this is the method of curing meat, which will cure in a few hours in this dry atmosphere. While our host was preparing our meal, he sought to entertain us by furnishing us what was, to me at least, real pleasure, an opportunity to look through a "travelers' book." The Mexican sentiments were patriotic, the English complaining the want of a good hotel. But, after all, a barber and bootblack are unnecessary luxuries in the heat of a Mexican wilderness. I could not refrain from subscribing my testimony to the courtesy of our host, the lovely air and scenery, and went to sleep only to waken when our driver came to announce that it was time to start..

F. K. MORELAND.

Irrigation in New Mexico.

Of the vast area of land in this Territory only a very limited part can be used for agricultural purposes. In favored localities the rainfall will compare very favorably in quantity with that of some of the States where fair crops are grown without irrigation. But here the rain comes during the rainy season, which varies in duration from one to two months. This rain comes at a time when it is of no practical use to the farmer. The snows that fall generally during the months of January, February, and March are a most important factor in the production of the grasses upon our immense arid mesas. These mesas or table-lands are the chosen home of the cow-man and sheep-herders. To those engaged in these pursuits heavy snows are considered of vastly more importance than rains. They claim that snow-moisture is more lasting than rain, and that when the earth is thoroughly saturated with melting snow the vivifying effects are felt throughout the entire season. Whatever may be the cause, it is certain that the native grasses, when once moistened enough in the spring to cause them to sprout, will grow, when subjected to weeks and months of uninterrupted sunshine, without a drop of rain, or even dew.

The soil here is of great depth and fertility when properly handled, but utterly worthless as farming-land until in some way watered by artificial means. This fact was known to the aborigines. Evidence exists of the artificial use of water, or irrigation, by the Aztec Indians, the earliest known occupants of this Territory. The Pueblo Indians, who are counted by some the descendants of the Aztecs, degenerated as they are and stripped of the semi-civilization of their progenitors, have clung to the art of irrigation. To make it useful as an aid to farming, a knowledge must be had of when the application of water will prove beneficial, the amount to be applied, and the length of time it should be flowed upon the land, first to prepare it for cultivation, and afterward upon the crop to force its growth. The theory is not advanced that this knowledge must be learned from the Pueblo Indians, or the more skilled Mexican who uses it here; but items can be taken from them and improved upon by observation and experience. Not every one who tries can succeed, even though he may have proved himself a thorough farmer under natural showers.

A fair statement of the possibilities and even actual results of the production of the soil here under irrigation would startle some of the theorists on crop rotation in the Eastern States. An Eastern man, who has lived forty years in this Territory, pointed to a plat of ground recently, and told the writer that for twenty-five years it had been planted in watermelons, and without fail, in a single instance, had yielded good crops. He also pointed out apple-trees with a record nearly as good for the same number of years; all the effects of irrigation. The same gentleman, in dwelling upon the advantage of having water at hand to flow upon his crops at just such time as it was needed, made a statement that illustrates a very singular circumstance. He has in bearing a row of ten or twelve apple-trees, set in, alternately, a native tree and an imported tree. On some of the native stock he has budded the imported, or, as he calls it, the American slip. The trees all bloom at the same time. The native trees bear small but perfectly sound fruit, while the imported trees and the budded part on the native stock have for four years been stung by some insect which has caused the fruit to be rotten at the core. The crop is a good average in quantity and appearance, but is practically worthless. He is naturally anxious to know how the insect distinguishes between the

blooms, which he says appear to the eye as identically the same. Long use has made the gentleman master of the forces at his command, and he uses irrigation to great advantage. In his orchard and garden are found in their season all kinds of fruit, peaches, apples, apricots, and grapes; also, strawberries, figs, and all kinds of vegetables; even sweet potatoes and tomatoes. The wonder and beauty of this fertility and great plenty can not be appreciated until it is remembered that this land, which is now furnishing such comforts to its owner, would be utterly worthless without the small ditches which bring the water for miles and miles from the dam where it is taken from the Rio Grande. Cut off from this water supply the trees would die the first season and it would be impossible to sprout the seeds in the garden.

N. GENTRY, Bernalillo Co., N. M.

Hard Winter in the Pacific Northwest.

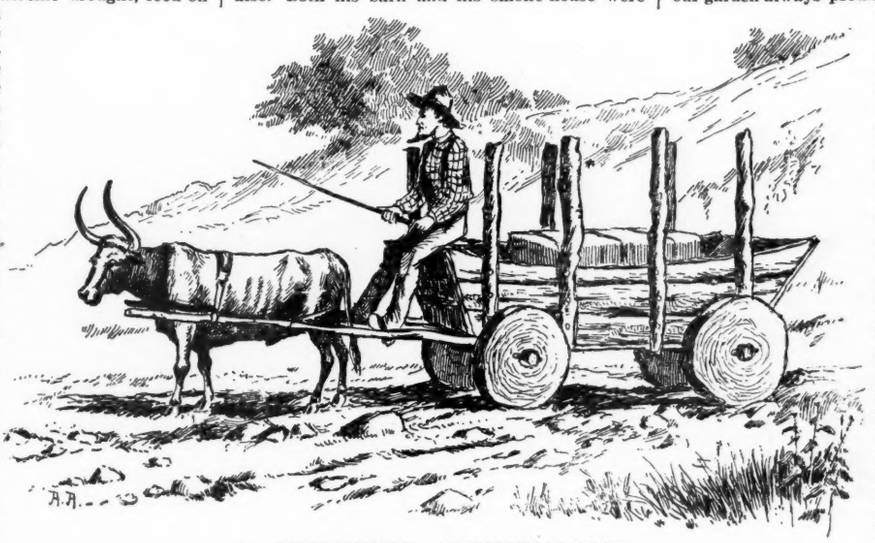
This is written in North Latitude 46° 30' and Longitude 121° west from Greenwich. While the Atlantic States were enjoying exceptionally mild weather, the winter in this region was one of unexampled severity and duration. It followed a season of drought and short crops, particularly of forage, for stock. Hay sold for $25 to $30 per ton, and was very scarce and poor in quality, at even those figures. There were great losses of cattle, horses and sheep, even where they were fed all the time. Cattle on range were practically annihilated. Owing to the extreme drought, feed on the range was short and water scarce; the cattle were poor at the beginning of winter. Freezing weather came on earlier than usual and shut the cattle off from the scanty water supply. Feeding commenced early in December for all range cattle. The cattle were driven into feed yards, without shelter; wagon loads of hay were drawn in and scattered on the ground, the hungry herds following and licking it up almost as fast as it was thrown from the wagons. Great care had to be exercised to separate all calves and weak cattle; for the strong ones crowded them away from the feed. The system of feeding is a wasteful one, both in the feed lost and in the loss of the animal. Extensive cattle raising on the Yakima range is becoming less profitable every year, and will soon be a thing of the past. The large ranches will be cut up into smaller ones, and greater care taken to produce adequate crops of alfalfa. That promises to be one of the most paying crops here in the future. The soil and climate are particularly adapted to its growth. As high as five crops are cut from the same field in one season. Cattle men have found that cattle do better on it than on wheat- or oat-hay. A large amount was sown this spring. Reports of almost entire loss of cattle and horses come from the Northern counties of this State and from Idaho. Yakima county is more fortunate than any of the surrounding counties on this side of the mountains. The loss here was from forty to seventy-five per cent. The spring has been a trying one for farmers. Many of them had very little to sell, or nothing at all. The extra cost of feed had drawn heavily on the resources of all. Seed was scarce and high, and food for working animals difficult to obtain. The ground is well wet up with the winter snows, which was all absorbed by the thirsty earth. The winter rains were unusually heavy. The mountains are piled high with snow. The previous winter there were only four feet of snow on the mountains, and this year there are from twenty to forty. Grass started rapidly in the spring, and the surviving cattle on the range are doing well. A large area has been put in fruit trees and plants. The promise now is for a large crop of fruit, except peaches, which will, I believe, be almost a failure. All kinds of fruit do well here. We have no insect pests, as yet, except the aphis, a sort of gray-looking chap, that preys upon our trees, particularly on plums. So far as I have noticed, peaches have no enemies. Yellows or blight are unknown. We have no curculio. Cut-worms are very numerous some seasons; also cabbage worms and the cabbage louse. We depend almost entirely on irrigation for all crops here. The winter snows are a great help, and getting in crops early is important, as then they do not need so much irrigation. Occasional spring rains help the early-sowed crops. The accumulation of snow in the mountains is our main dependence. We are as dependent upon divine bounty here as are our brothers who do not irrigate. The Lord of the harvest is Lord of the harvest still.

M. B. CURTIS, Yakima Co., Washington.

The Southwest as a Hog Country.

Every year hog-raising is becoming more popular throughout the cotton-growing States. Twenty-odd years ago, when cotton sold for 15 to 20 cents a pound, the hog was a much-neglected quadruped in the South. The cotton-grower's whole attention was devoted to the fleecy staple exclusively, and he sent to St. Louis, Chicago, Cincinnati, or Kansas City for his bacon.

The high price of cotton, together with the big crops that were raised for ten or twelve years following the close of the war, led the Southern farmer into habits of extravagance and wastefulness. In many instances he not only sent abroad for his bacon and lard, but for his corn also. Both his barn and his smoke-house were located somewhere in the Northwest. He did not even utilize that most valuable product of his farm, cotton-seed, but threw it out to rot and waste.



A PRIMITIVE CONVEYANCE.

Necessity and experience have of late years taught him many valuable lessons in domestic economy, however. The low price and short yield of successive cotton crops, raised on supplies bought upon twelve months' credit and a crop mortgage, have at last led our people to realize the fact that they can not prosper under a one-crop system. They, have found out that their prosperity, to a large extent, depends upon home-raised "hog and hominy." Consequently, the hog has grown in popular favor in the South. The old-time loyal subject of "King Cotton" has discovered that he has a climate wonderfully suited to the hog and also to the best food stuffs for his digestion. He has found that it pays better to plant plum and peach orchards, cow-peas and goobers, sweet potatoes, and corn, and raise hogs upon these crops, than to plant cotton exclusively. He has also found that cotton-seed, when reduced to meal, is one of the very best rations for hogs as well as cows. A Georgia farmer has been experimenting recently with roasted cotton-seed, and he says: "I have moved my smoke-house from the corn-field to the cotton-field, and find myself able to keep bacon in it all the year around. * * * * I can make as many pounds of pork with 100 pounds of roasted cotton-seed as I can with 100 pounds of corn."

Thus a new and valuable use is found for cotton-seed, and pork production in the South is materially facilitated. A few pork packeries in the leading commercial centers of the South would add a great impetus to Southern hog-raising. Dallas, Texas, has a packery in prospect for the coming season, and other cities will doubtless soon follow her example.

To say the least, the prospects of pork production as a Southern industry are at present quite encouraging. DICK NAYLOR, Harrison Co., Tex.

Manuring in Germany.

I have always taken a great interest in what is said or written about the effect of different kinds of manure. From personal experience I am led to think that no commercial fertilizer is as good for general use as the droppings of farm animals, the liquid part of which is, to a large extent, wasted in the United States. In Germany it has always been considered the best of all fertilizers, for it gives to plant-life the quickest and most effective food. Farmers, who spend yearly large sums for commercial fertilizers, would better invest in a large, well-cemented pit, covered, with open seams in the cover, large enough to admit the drainings of the manure pile, which should always be kept over the pit. When the heap becomes too dry, pump some of the liquid over it, to keep from overheating. The value of the liquid would in one year pay for making the pit. Thereafter, it would be a regular income every year. In Wurtemburg, we never think of using any other than liquid manure in the garden, on corn, or any hoed crop, and our garden always produces large and good crops. In extra dry seasons we mix it half water; in fact, it is strong enough to admit some water at all times. On land where clover is growing we drive through with a large barrel like a street-watering cart, and where we can not drive we use pails and sprinkling pots. We always apply either in damp, rainy weather, before sunrise or after sundown. Such manuring shows quicker and better effect than any other. I am also a great believer in top-dressing, particularly where the ground is level and well drained; for it is natural that manure has a tendency to work, or sink downward, and in very loose or porous ground a large percentage of manure sinks out of reach of plants, except those that have very large or long roots. But when manure is put on the surface it reaches the roots very soon, and is taken up by them. Some people say, that in top-dressing a great deal is lost by evaporation. Even if such is the fact, is there not also a great offset in favor of top-dressing by having a mulch to cover and protect plants from cold in winter and from heat in summer? On wet or on hilly ground it is better to plow the manure under, for the first needs something to keep it loose and give the air a chance to penetrate, and on hills manure is not so ready to wash off if it is plowed under. I am not condemning the use of commercial fertilizers, as I have no doubt that some at least are good. But every farmer can have from his own place manure better than some that I have bought and tried.

J. C. METZGER, Wurtemburg, Germany.

An Alabama Cotton-Cart.

A singular vehicle was seen in Birmingham, the other day, from back in the hills. A man brought in a bale of cotton raised on his place, some twenty miles distant. The wagon was boat-shaped, and made of rough-hewn boards, fastened together with wooden pins. The wheels were solid wood, having been sawed from a log about thirty inches in diameter. There was a hole through the center of each for the axle. This singular conveyance was drawn by a small-sized ox, which had taken twelve hours in which to travel the twenty miles to town.

FRANK L. WELLS, Jefferson Co., Alabama.

Better than Ever.—I have taken the AMERICAN AGRICULTURIST for thirty years. It is now better than it has ever been. W. A. STOCKING, Hartford Co., Conn.

SCIENCE IN FARMING.

Recent Bulletins.

Tobacco has been successfully grown at the Colorado station (Bulletin 10). It is said to be fully up to the Connecticut grades, and promises to be a valuable crop, yielding nearly a hundred dollars profit per acre.

Large crops of beets can be easily grown in Colorado, full details for growing which are given in Bulletin 11. The chemist shows that the crop contains about ten per cent of sugar. It is an interesting fact, that the amount of sugar increases somewhat regularly from the top of the beet downwards.

The crop of sugar beets at the South Dakota station (No. 16), while not as great in yield or percentage of sugar as in more favorable seasons or with better methods of cultivation, was such as to insure a good profit. The whole operation of raising the crop is given in detail, together with its value as a food for live-stock.

The press drill gives better results than the broadcast seeder, but is more expensive, according to South Dakota experiments (No. 17). Many notes upon the varieties of wheat and oats tested are given, and about half of the pamphlet is occupied with a treatise upon smuts, taken from a bulletin from the Indiana station, and contains valuable suggestions for all growers of cereals.

The experiments at New Hampshire, Bulletin 9, show that while the food ration may increase or diminish the amount of the milk produced, the character of the product remains quite constant. Succulent food makes more and a better milk. The variety of the orchard tree determines the character of the fruit, no matter what the soil and culture may be; so with the cow. "Quantity is the result of food influences; quality is the result of the make-up of the animal."

A guide to the application of the arsenites, carbolized plaster, kerosene, white hellebore, bisulphide of carbon and cyanogen is published as Bulletin 58, Michigan. London purple is much cheaper than Paris green. The use of the arsenites upon the peach is questionable. No water mixture of any poison should be applied to fruit trees while these are in blossom. The London purple and Bordeaux mixture can be combined for the fruit rot and curculio of the plum.

Aside from the brief annual report, Bulletin 8, Iowa, is almost entirely from the Chemical Department, and deals with milk-testing, sweet cream, butter, sugar-beets, and sorghum. Prof. Patrick offers a new method for determining the amount of butter-fat in milk. A glass tube, with a slender, graduated neck is employed, with an acid mixture, consisting of nine volumes of pure acetic acid, and five of commercial oil of vitriol, and, after mixing, add one volume of pure hydrochloric acid. In the experiments with the sugar-beets nothing was determined of real significance as to the adaptability of Iowa, in soil and climate, to the requirements of this money crop.

No. 57, from Michigan, is a large bulletin upon the comparative tests of long lists of potatoes, tomatoes, beets, cabbages, cauliflower, corn, lettuce, peas and radishes. Manure placed between the rows as a mulch gave better results than when used either under or over the seed. Trenches five inches deep, covering the seed two inches, gave the best results with potatoes on dry soil. Scab of potatoes was increased by using hyposulphite of soda, but decreased with sulphur, and is most abundant in decaying organic matter. With tomatoes there is little to be gained in earliness in using seed from the first ripened fruit. It pays to start the plants under glass, and have them large and strong at the time of setting out.

The insects injuriously affecting cranberries are treated in a special bulletin from the New Jersey station. This subject is fully treated, with twenty-seven engravings, and covers the investigations of 1889. The leading pests are the black-headed cranberry-worm and the yellow-headed cranberry-worm, the damages of which are enormous, causing the bogs to appear as if burned over. Reflowing is the best remedy, and next best is late holding of the water. If water treatment is impossible, some insecticide may be used. Prof. Smith recommends, from a long list, the following as the best: Kerosene one gallon, water two gallons, soap one-half pound, applied in a fine spray at the time or before the larvæ hatch. Several natural enemies of these pests are described. Other enemies are the fruit-worm and the tip-worm, the latter, a newly-described insect, not being particularly injurious.

The tomato has a prominent place in the second annual report of the Maryland station, with an introductory chapter upon its history and botany by Dr. Sturtevant. From the test garden, containing sixty varieties, it is concluded that the larger the fruit the greater the number of cells and the more solid the flesh and fewer the seeds. Ignotum, Paragon and Favorite lead for general culture. From the potato experiments it is confirmed that "the greater the quantity of seed potato planted the greater the total yield;" a whole potato, "egg size," is best for seed. In a comparison of Northern- and Southern-grown seeds there was a difference in favor of the Vermont over the Maryland seeds at both the Vermont and Maryland stations.

The broom-rape (*Philipœa ramasa, L.*) is a serious parasite upon tobacco and hemp, and very likely introduced in hemp seed from China. By means of several engravings, the germination of this pest is fully shown in Bulletin 24, Kentucky, as well as its manner of attachment upon the roots of the infested plants. The injury done arises from the appropriation of the sap of the host, causing a feeble and worthless growth of the crop. The most practicable method for eradicating the pest is by growing non-susceptible crops for a few years. Burn over the infested field. The broom-rape is worst on a loose soil, and therefore a heavy soil is recommended by Prof. Garman. Among the seemingly worthy strawberries at the Kentucky station, Bulletin 25, for market are Jessie, Bubach; for family use, Starke, Crawford, and Henderson. The Jessie is a good fertilizer for pistillate sorts.

In volume third, No. 1, Ohio, Prof. Green first treats of comparative values of varieties of potatoes as the result of thirteen trials made in eleven different localities. The most productive early sorts are Oxford, Puritan, Early and Crown Jewel; of medium and late sorts, Empire State, Summit, Seneca Beauty. From the extensive trials of fertilizers it is determined that superphosphite (Thomas slag is the cheapest form) was generally used, with large profits. The potato requires a rich soil, and, as the direct application of fertilizers is not constantly attended with favorable results, it is best to bring the soil up to a high state of fertility by enriching it for previous crops. Potatoes after clover is very satisfactory. From many tests of the size of cuttings for seed, it was found that the larger the piece the greater and earlier the yield. "The safest plan is to use large, well-matured, healthy potatoes, cut to two and three eyes."

Miscellaneous Bulletin No. 1 of the statistical division of the United States Department of Agriculture, at Washington, is devoted to flax and hemp culture, Part 1 treating fully of this subject in foreign countries, and Part 2 covering the industry in the United States. The principal object of this investigation is to show that, by better methods of culture and by a little more careful handling of the product, flax may be grown in this country for both seed and fiber, the demand for fiber having grown rapidly within the last few years. Indeed, it is shown that while we are importing millions of dollars' worth of fibers yearly, we raise a million acres of flax, of which the straw, after the seed is removed, is almost wholly wasted or burned! The cultivation of hemp, in States north and south of the Ohio river, is also treated in full, showing the increase in this industry since hemp straw has been so largely used in the manufacture of binder twine. This twine is shown to be equal to binder twine from sisal and manilla, besides being considerably cheaper. Jute and ramie are also treated.

The results of last season's experimentation with fungicides for the apple-scab, by Prof. E. S. Goff, are given in Bulletin 23, Wisconsin. The Fameuse or Snow variety was selected as being badly affected. Potassium sulphide, soda hyposulphite, sulphur powder, ammoniacal carbonate of copper, and a liquid sulphur preparation were used. There was an improvement in all cases, but the best remedy was the copper compound. This more than doubled the per cent of fruit of first quality. The results are so satisfactory that the treatment is here given: Dissolve one ounce of carbonate of copper in a quart of ammonia water, and dilute with twenty-five gallons of water, which will spray twelve to twenty trees, according to their size. Four applications should be made, beginning with the unfolding bud, using a force-pump and spraying-nozzle. It is not recomended to spray this mixture with London purple or Paris green; ammonia renders some of the arsenic soluble, and burns the foliage. A method should be found for combining the insecticides with the fungicide.

Station Publications Received.

ALABAMA—Exp. Sta., at Auburn, Bul. 11, February, 14 pp., peaches and plums; Bul. 12, co-operative soil tests; Bul. 13, March, 20 pp., microscopic study of certain varieties of cotton, with illustrations.

ARKANSAS—Exp. Sta., at Fayetteville, second annual report, 204 pp., illustrated.

CALIFORNIA—Exp. Sta., at Berkeley, Bul. 85, February, 4 pp., observation on olive varieties.

COLORADO—Exp. Sta., at Fort Collins, Bul. 10, January, 16 pp., tobacco; second annual report of the station, 136 pp.

CONNECTICUT—Exp. Sta., at New Haven, annual report for 1888, Parts 1 and 2.

DELAWARE—Exp. Sta., at Newark, Bul. 8, March, 16 pp., the possibilities of developing a domestic sugar industry; the value of sulphide of potassium as a remedy against pear scab, London purple as a remedy against the codlin moth; 2d annual report, 196 pp., giving the director's report and a statement of the work done in the various departments.

ILLINOIS—Exp. Sta., at Champaign, second annual report, 18 pp.; Bul. 7, November, 110 pp., the biology of ensilage, exp. with corn.

INDIANA—Exp. Sta., at Lafayette, Bul. 30, February, 12 pp., influenza.

IOWA—Exp. Sta., at Ames, Bul. 8, 46 pp., station milk test, sweet cream butter, sugar beets, sorghum, annual report.

KANSAS—State Board of Agriculture, report of its 19th annual meeting, held at Topeka, Jan. 8-11, 168 pp.: M. Mohler, Secretary, Topeka.

KENTUCKY—Exp. Sta., at Lexington, Bul. 22, December, 24 pp., potato experiments, Bul. 23, February, 14 pp., experiments with oats and tests of fertilizers on meadow land; Bul. 24, March, 20 pp., the broom-rape of hemp and tobacco; Bul. 25, April, 8 pp., strawberries.

LOUISIANA—Exp. Sta., at Calhoun, annual report of crop results, 48 pp.

MARYLAND—Exp. Sta., at Agricultural College, 2d annual report, 162 pp.

MASSACHUSETTS—State Exp. Sta., at Amherst, Bul. 36, March, 16 pp., meteorological report, also, some suggestions on how to improve in an economical way the productiveness of our farm lands. Hatch Exp. Sta., Bul. 15 of the meteorological report; Bul. 8, April, 24 pp., experiments in greenhouse heating, observations on peach yellows, how far may a cow be tuberculous before her milk becomes dangerous as an article of food.

MICHIGAN—Exp. Sta., at Agricultural College, Bul. 57, March, 44 pp., vegetables; Bul. 58, March, 14 pp., insecticides.

MISSOURI—Exp. Sta., at Columbia, Bul. 10, April, 16 pp., analyses of apples at various stages of growth, Bordeaux mixture for grape rot, comparative tests of small fruits and potatoes.

NEBRASKA—Exp. Sta., at Lincoln, third annual report, 28 pp.; Art. No. 12, field experiments for 1889, 64 pp.; Bul. 13, April, 80 pp., experiments in the culture of sugar beet in Nebraska.

NEW HAMPSHIRE—Exp. Sta., at Hanover, Bul. 9, February, 16 pp., effect of food upon milk; Bul. 10, March, 14 pp., fertilizer experiments.

NEW JERSEY—Exp. Sta., at New Brunswick, Bul. 65, January, 16 pp., experiments with different breeds of dairy cows; Bul. 66, March, 8 pp., fertilizing materials; special bulletin K, February, 44 pp., the insects injuriously affecting cranberries, with illustrations. Proceedings 15th annual meeting State Horticultural Society, 224 pp.: E. Williams, recording Secretary, Montclair.

NEW YORK—Cornell Exp. Sta., at Ithaca, Bul. 15, December, 216 pp., sundry investigations made during the year; 2d annual report for 1889, 216 pp., illustrated, with an appendix of 12 pp. giving a detailed statement of receipts and expenditures. State Station at Geneva, circular to the originators or proprietors of new fruits, March, 1890, 18 pp., including methods adopted for the systematic testing of new fruits and a list of fruits now under trial.

NORTH CAROLINA—Exp. Sta., at Raleigh, Bul. 69, February, 16 pp., fertilizer analyses.

OHIO—Exp. Sta., at Columbus, Bul. 8, Vol. 2, December, 196 pp., illustrated, eighth annual report: Bul. 1, Vol. 3, January, 16 pp.; experiments with potatoes.

PENNSYLVANIA—Exp. Sta., at State College, Center Co., Bul. 10, January, 32 pp., raising their own vegetable seeds, notes on new varieties of vegetables, tests of agricultural varieties.

SOUTH CAROLINA—Dept. of Agriculture monthly crop reports.

SOUTH DAKOTA—Exp. Sta., at Brookings, Bul. 16, February, 8 pp., the sugar beet; Bul. 17, March, 24 pp., small grain.

TEXAS—Second annual report of the Ag'l Bureau of the Department of Agriculture, Insurance, Statistics and History, 388 pp.

VIRGINIA—Exp. Sta., at Blacksburg, Bul. 3, November, 16 pp., steer-feeding, meteorological record; Bul. 4, January, 18 pp., field tests with tomatoes, chemical composition of tomatoes.

WISCONSIN—Exp. Sta., at Madison, Bul. 22, January, 12 pp., report on oats, barley and potatoes for 1889; Bul. 23, April, 12 pp., prevention of apple scab; sixth annual report, 256 pp., illustrated.

FOREIGN—Ontario, 15th annual report of the Ag'l College and experimental farm, 204 pp.

UNITED STATES DEPARTMENT OF AGRICULTURE at Washington, D. C.; Nos. 7 to 9 of *Insect Life;* entomological; Bul. 21, 32 pp., illustrated, report of a trip to Australia to investigate the natural enemies of the fluted scale. Bureau of Animal Industry, fourth and fifth annual reports for 1887-1888, 510 pp., 26 plates, including progress of the work in extirpating pleuro-pneumonia, beef supply of the United States, cattle quarantine, nature and prevention of hog-cholera, associated dairying in New England, etc. Division of Chemistry, Bul. 23, record of experiments in the production of sugar from sorghum in 1889 in the principal sugar-producing sections.

FARMING IN FOREIGN LANDS.

New Zealand—The Sunny Isle of the South Pacific.

The New Zealand group consists principally of what is generally known as the North and Middle Islands and Stewart Island, and the Chatham, Macquarie, and Kermadec Isles. The three principal islands have a length from north to south of about 1,100 miles, extending from 34° 15' to 47° 30' South Latitude, lying between 66° 30' and 78° 30' East Longitude. The greatest width of the Middle Island is about 150 miles, and that of the North Island 300 miles.

The climate is much diversified. In the Southern Island, snow is frequently seen in winter, rarely remaining on the ground more than twenty-four hours—and frosts scarcely ever last the day through. In the North Island, especially in the northern parts, the hardy farmer used to the rigors of a Canadian winter would think he had got into the region of perpetual spring. The South Island seems more fitted for grain-growing than the North Island. All English fruits grow to perfection, but, except in very favored, sheltered localities, peaches do not thrive in the open. But in the North Island, midway between Wellington, the capital of the colony, and Wanganui, the peach and its sub-varieties yield luxuriantly. Lemons, oranges, and limes are, in a few sheltered places, grown in the open in the vicinity of Wanganui, while in the Northern province (Auckland) oranges, lemons, and most of the semi-tropical fruits thrive well. The happy medium of climate is, however, found between New Plymouth and Foxton (connected by railway), a distance of about 200 miles. The annual mean temperature at Wanganui ranges nearly midway from 55° to 57°. The mean summer, 63° to 65°; the mean winter, 47° to 49°. Mean daily range for the year, 19° to 20°. The rainfall in the same locality is from thirty-nine to forty-one inches. It will thus be seen that the climate is very equable.

Of primary importance to the farmer is the security of his tenure. In no part of the world are land laws more simple than in New Zealand—the Crown conveying an absolutely irrefragable title to the purchaser under a system known as "Torren's." If a person sells his land, he executes a conveyance. This, with the original certificate, is sent to the land-office. The original certificate, with the conveyance, is there filed, and a new certificate is issued to the purchaser. This system is doing away with the complicated and large number of deeds that accumulate when land changes hands often under the old English system of conveyancing. This applies not only to the Wanganui district, but all over New Zealand.

The inhabitants in the vicinity we are describing are united in believing they occupy one of the most fertile districts in the Southern hemisphere. The soil consists for the most part of a rich, dark loam from seven inches to a foot in depth, resting on a porous, marly clay. Wheat, oats, and all the cereals yield luxuriantly; but the country is more used for grazing than anything else. The winters being very mild, stock do not require to be housed. The carrying capacity of the land (after being once plowed and laid down with perennial rye and white clover) varies from two to five sheep per acre the whole year round. During the spring and early summer months, the growth of grass is immense. The writer once saw 800 sheep kept on sixty acres for three and one-half months, and taken off in good condition. This is an extreme, and illustrates what is possible when soil, climate, and cultivation, are at their best.

Potatoes grow well. Thirty to forty bushels of wheat is an ordinary crop. The writer has helped to harvest a field of twenty acres yielding sixty-five bushels (sixty pounds) to the acre; and was shooting stubble ducks this season over a sixty-acre paddock of oats that had just yielded the proprietor an average of ninety-one bushels (forty pounds) to the acre. But it is as a grazing country that this part of New Zealand is more particularly adapted, and, as a wool-producing country, is one of the most profitable in the world. There is not a large quantity of level land, and only the level open is suitable for agricultural purposes; the major portion of the yet "untaken-up" land consisting of undulating rolling and hilly bush country. This costs from eighteen to thirty shillings ($4.50 to $7.50) per acre to cut down and burn. It is then sown with grasses, principally white clover, rye grass, and cocksfoot (*Dactylis glomerata*), from three to six months afterward. It will then carry from one and one-half to two and one-half sheep per acre all the year round without any artificial food whatever. Land in these outer parts of the district is available in either large or small blocks. Large blocks, up to 16,000 acres, can be bought from private individuals who purchased from the Maoris before the government discountenanced private purchase. The government has smaller areas for sale—discountenancing large blocks—either for cash, for deferred payment, or on perpetual lease. For cash, the price ranges from ten to twenty shillings ($2.50 to $5) per acre, and if you elect to take a lease, the rental varies from six pence to one shilling per acre for twenty-one years, with your improvements protected. At the end of twenty-one years your improvements are valued, the rental is assessed at what the land is worth in its rough state, and you have the option of it at the unimproved value. If any one takes it then you get in cash the value of your improvements as assessed. If it is taken on the deferred payment system, twenty-five per cent is added to the capital value, and this is divided into twenty half-yearly payments. At the end of the time, or not less than three years, before which the government will not take money, and only then if you have improved to a certain value, you obtain a crown grant. Thus, if the cash price is twenty shillings ($5), then the deferred price is twenty-five shillings ($6.25) practically, and your half-yearly payment would be one shilling per acre.

EDWARD N. LIFFITON, New Zealand.

At Other Points.

English farmers have formed an alliance to obtain a readjustment of tithes and rents. The farm laborers' union has also been organized.

South London dairymen have combined, to secure better prices for milk, to resist advances in freight, and to protect themselves against loss of cans and churns in transit and among the trade.

The farmers on the island of Minorca have very convenient gates, so made that they can be unhung and used as a harrow, the farmer riding on them. Most of the harrows on the island are of this description.

Australian dairymen claim to make butter from cream without churning, by burying it in the ground. One James W. Graham says he has a patented device for getting the butter in one hour by this system—a pretty good story.

Brazil imports large quantities of butter from Switzerland, at excellent prices. That country would doubtless buy a large amount of butter from the United States if quick and cheap transportation were provided for a good article, put up in sealed jars.

One of the higher English courts has decided that, while a man who brought anything upon his land noxious to his neighbor could be made to pay damages, this was not the case when the pest was the natural produce of the land. The defendant had a right to till his land, and could not help the thistles coming up.

While raw cotton is one of the most important articles of export in India, the cotton manufacturing industry is also very large, and has shown a remarkable increase during the last few years. In 1867 the consumption of raw cotton in Indian mills was only 60,000 bales, but last year it reached 889,000 bales—an increase of 1381 per cent in twenty-two years.

A peculiar pest is disturbing the farmers in Australia. It is the flying fox, which this year is extending its operations not only to Isabella grapes and the finest of peaches, as in former years, but to the passion fruit and mulberries. It is feared that when the further progress of settlement has made still more scarce these animals' natural food they will attack such products as maize.

High farming is kept up on the island of Guernsey, which last year exported to London 400,000 packages of garden produce, although it has only 10,000 cultivatable acres and supports a population of 35,000. The produce exports have increased 300 per cent in seven years, although nearly all the growers are amateurs, who are principally engaged in other pursuits and possess but small agricultural holdings.

The government tobacco monopoly in the Philippines was given up about seven years ago, and the industry has since developed amazingly, over 65,000 acres being in tobacco this year. Manufactures have also largely increased, one company alone having a capital of $15,000,000, employing 10,000 hands, and producing annually 80,000,000 cigars, 400,000,000 cigarettes, and 5,000,000 pounds of cut tobacco.

The raising of beets for the manufacture of sugar is being advocated in Ireland and England, where tubers containing from eleven to sixteen per cent of sucrose have been grown. It is estimated that it would cost about $50 per acre to grow the roots, and that the crop would net about $90 per acre, showing a profit of $40. This is on the basis of about twelve tons of beets per acre, selling at $4.64 per ton, sixty-two cents per ton for the beet pomace for cattle feeding, together with a balance of four dollars per acre for small beets and leaves for feeding purposes. The profits of German and continental beet sugar factories for the season of 1888-9 are quoted, showing dividends of from four to forty-five per cent.

Rice is the staple crop of Japanese farmers, large and small, and consists of two varieties. The most popular is similar to that produced in our Southern States. The plants are started in hot beds, and when the seedlings are five to six inches high, along in May, they are transplanted into fields which have been flooded by irrigation or otherwise most of the time since the harvesting of the previous crop in October and November. After the plowing, which is done in the primitive style characteristic of that region, the plants are put in tufts of several plants about six inches apart, and the natives wade about in the water and mud in setting them out. The fields are hoed every two weeks. The grain is cut with a sickle, made into bundles and left to dry in the fields. When dried, the rice is threshed by flails, separated from the chaff, and the hulls removed by pounding in a mortar. With the introduction of new machinery and more modern processes, it is expected that rice culture in Japan will become a leading industry, and a source of considerable wealth to the nation, instead of being, as now, raised almost wholly for home consumption.

The India rubber industry of Upper Burmah has shown a rapid increase since 1870. Especially is this true of the Kachin district north of Magoug, which stretches east across the Chinese border. Since 1873, the monopoly has been leased under the Burmese king to Chinese firms, who superintend the work. Under the conditions of this contract, the lessees make liberal allowances to the native laborers to meet their expenses during the collecting season; then, when the produce is brought in, the Kachins sell the rubber to the Chinese manager at half the market value. But notwithstanding this, a good deal of dishonesty is practiced on both sides, the Kachins putting stones inside the rubber balls to increase their weight, and the traveling agents of the lessees taking all possible advantage of the fact that the natives have no standard weights. Four-fifths of the annual supply of rubber is brought by the Kachins to Magoug, which is the central town of the industry, the remainder being purchased by the agents on the spot. Two years ago an effort was made by the Chinese lessees to bring in their own countrymen to work in the forests, but the natives burned the forests and drove out the intruders.

The Indian government has not only done much to establish the cultivation of cinchona in suitable parts of that country, but has also given the widest possible publicity to the cheapest and most effective process for extracting its alkaloids. An effort is now being made, however, to induce the natives to carry on this industry under private management, and to this end the quinine-yielding value of different cinchonas has been carefully studied by Mr. M. A. Lawson, government botanist and director of the cinchona plantations in Madras. Out of six species or varieties of cinchona experimented with, under the same conditions of soil, climate and exposure, he has discovered the most satisfactory variety, because the richest in quinine and most hardy in growth, to be intermediate between the *Cinchona officinalis* and the *C. succirubra*, as for instance the *C. magnifolia*. Other experiments show that, according to the lowest and most cautious estimates, and making every allowance for occasional fluctuations in the market, an acre of cinchona trees will produce on the average 26,130 pounds of dry bark, and 1,120 pounds of sulphate of quinine, thus proving that, even should the present low price of quinine continue, it could not fail to be a remunerative industry.

OUR BASKET

Never Waste Plants.—If you have more cuttings than you care to use, give them to some neighbors who may have no plants, but who would be glad of a few to brighten their windows through the summer, if not longer. If no one happens in at the time you trim your plants, stick the cuttings in the soil and let them root, and by and by you will have fine little plants to give your friends, or to plant out of doors in your own garden. If you sow seed, you will probably have to pull up a good many plants from the beds, and these the girls and boys of poor neighbors will doubtless be glad to get. By giving away the plants you help to make their lives pleasanter, and the care of them will teach the children useful lessons. If it should happen, as it rarely will, that you have no neighbors who would be glad to take your extra flowers off your hands, it is a good plan to put them out in some corner where they will grow and blossom through the season, to cut from. Such an "overflow" corner will be found one of the pleasantest parts of the garden, and very useful to draw from for bouquets for friends, or use in the house.

Keeping Cut-Flowers.—There are two important points—to keep the water pure and to cut off the ends of the stems as they harden. The water may be kept pure by frequent change, but it is easier to use some antiseptic—ammonia, nitrate of soda, or salicylic acid. The last named is the best. Be careful not to use too much. The ends of the stems should be cut off each morning, at least, as they harden and close the sap vessels, and water can not be absorbed; and, also, the ends of the stems should not rest on the bottom of the vessel. The vessel should be so large that the stems are not crowded in it. The flowers can be kept longer by removing them from the vessel over night, sprinkling them until quite damp, and wrapping them in several thicknesses of paper or putting them in a pasteboard box, and placing them in a cool place. Flowers may be revived by cutting off the ends of the stems and placing them for ten minutes in water almost boiling hot, then in cold water to remain.

Wood Ashes vs. Superphosphate.—Owen L. Clark, St. Clair Co., Mich., writes: "I see in Harris's 'Talks on Manures,' that unleached wood ashes contain 10 per cent potash and 6½ per cent phosphoric acid. Is the phosphoric acid in a condition to serve readily as food for plants." It is about as available as the phosphoric acid in bone dust, but not as available as that in superphosphate. Mr. Clark says "most farmers about here sell their ashes for about seven cents per bushel." That would seem to indicate either that the soil does not need potash and phosphoric acid or that the farmers have not found out their real value. Unleached wood ashes contain everything of real manurial value in barn-yard manure except nitrogen. If barn-yard manure does good, and ashes do not, it is nitrogen that is needed.

Sward.—Mr. J. B. Olcott is doing solid work for American agriculture. His peculiar talents are now turned toward the turf-making grasses, and, from a recent address before the Connecticut Board of Agriculture, a few of his suggestions are here presented. An anarchist hates to see a farmer have any sward unless he happens to marry his daughter. Sward land in "good heart" is *healthy* land. "Greenhouse men will make patting-earth fit to grow anything if they can have a portion of old pasture sod to leaven and give it *life*. That word meant volumes of modern microscopic philosophy in the crisp speech of our fathers who knew well the yeast of fertility preserved in old sward." And again "whipped by plagues for following false 'profits,' the very ancients knew the necessity of arresting tillage by grazing. * * * Nowhere in temperate zones, except he plows the sea, can civil man escape the turf-making trade. * * * Polities will continue very much mixed until we learn to purify our grass seeds. * * * Let us pray that the robber nations of the world give us peace and time to learn it [the art of sword making]. We have suffered by certain arrant weeds too often advertised as forage plants by those who ought to know better. Call it sod-botany until we get a better name. So far as its grass is concerned, we have but just discovered this continent," all of which points to the wholesome fact that we should select the best sods and grow and propagate them and thereby get the best we now have to improve upon as a basis for our future sod grasses.

Raising Water.—Henry Trower, Douglas Co., Oregon: The cheapest method of watering a mesa lying eighteen feet above low-water mark of a rapid river which flows past it is a problem in hydraulic engineering that can best be solved after careful personal inspection. At this distance it would seem that the best means would be a hydraulic ram operated by pipes leading from the river at a sufficient distance above the ram to give the necessary head and fall.

Manure for Garden.—J. F. Ruseve, Fairfield Co., Conn.: A mixture of henroost droppings and sifted coal ashes with stable manure and forest-leaf bedding makes a strong and valuable manure for the garden or field. The coal ashes have very little manurial value in themselves, but act as an absorbent, holding the ammonia.

Hedge Plants.—M. J. Harris, Lincoln Co., Ky.: As you have had no experience in raising hedge plants from seed, you would probably succeed best by purchasing them at the nurseries and planting where you desire to have a hedge. You will also save at least two years in time, for the seed must be sown in nursery rows and the plants cultivated for a year or two before they will be large enough to set out in hedge rows. If the soil is rather moist and near the banks of a stream, the three-thorned acacia or honey-locust will be better adapted to the situation than the osage orange. The latter, however, is probably the better of the two kinds for dry soils. Set two-year old plants about eighteen inches apart in the row and then cut down to within one foot of the ground. Cultivate both sides for a space of two or three feet, and allow no grass or weeds to grow near the plants until they become well established or three or four years old, and you will obtain a good, substantial hedge strong enough to prevent cattle from breaking through.

Barberry Hedges.—A. T. Everhart, York Co., Pa.: The common barberry will make a very good ornamental hedge, and perhaps strong enough to turn hogs and sheep, but cattle and horses will break through, as the spines are not strong enough to pierce the hair and hides of such large animals. The osage orange and three-thorned acacia are preferable for making hedges for turning cattle and horses, although they require a great deal of pruning to keep them in good form and close and thick at the bottom. Barberry and other kinds of hedge plants can be obtained at the seed stores in this city, and probably elsewhere.

The Doctrine of Replacement.—From what can be gathered in the orchard, at the time of writing, it seems very probable that the peach crop will be a short one. What with the warm winter that favored growth, and the cold snap of early March, it is only a matter of a little forethought for fruit growers and others to cast about for some way, if possible, to make good the loss. Of course those who have pears and other fruits will take good care of them and market as many baskets as possible. But if the peach crop is gone, the berries and other fruits do not supply its place, for they are a part of the regular orchard and garden product. If there is anything that can take the place of the luscious peach, it must certainly be something fine. The expression, "replacement of the peach," must be used with many limitations. The fruit from necessity must be of an annual one, and therefore encompassed by a single season. There are some such fruits, but, as said before, they are not peaches. To many it is worse than irony to mention cantaloupes in the same breath with peaches; others do not object, and therefore so long as peaches are blasted, and the season for the melons of various sorts is still to open, it may not be out of place to suggest the idea of a big acreage of the latter. Some persons, if they can not get the basket of peaches, would probably condescend to the consideration of some fine melons. There are other annual fruits, as the tomato, that should be thought of in this connection. If we can not replace a crop, try and do the next best thing, and have something else ready.

Cost of Brooder House. W. J. Swift, Jr., Barnstable Co., Mass., writes: Poultry men in this section are building nice, durable brooder houses, which cost only $1.50 per lineal foot. The boilers cost less than fifty dollars, and piping costs twelve cents per foot. The brooder house complete, seventy feet long, need not cost more than $140.

Growing Potatoes in Moss.—Sherman Adams, Orange Co., Fla., writes us: Farmers in my section have just learned how to grow Irish potatoes successfully on their recently drained muck land. After the soil has been prepared by digging or plowing, in the holes dug we wrap each piece of seed potato in a good handful of sphagnum moss, which grows plentiful in low places. This we cover with a mucky soil, and cultivate in the ordinary way. The result of this method of planting is large yields of potatoes of excellent quality.

Care of the Pasture.—If there is a fence around it high and stout enough to stop the inclosed stock from getting out, and therefore into something better, many farmers think they have done enough for the pasture. The fact is that the farmers who look upon the pasture as a place to be left to itself are also the ones who wish to sell out and go into the dray business or run a grocery in the village. They forget that a pasture is good only as it produces large amounts of the best grass for the daily rations of the cows and other farm stock. The pasture grasses should be of the best sorts, sweet and smooth, not coarse and hairy, and, equally important, the roots should find it an easy matter to secure an ample supply of the food elements needed for a rank growth. If the soil is not already rich enough for this, put on fine, well-rotted manure or some fertilizers. Nitrate of soda may be sown, a couple hundred pounds to the acre, almost any time during the growing season with profit. In short, the pasture needs to be looked after as well as the meadow, and the meadow as well as the grain field. Show us the condition of the grass land, and it will not take long to decide what grade of farming is practiced.

Fruit Spurs.—E. Smith, Larimer Co., Col.: The swelled twigs from your Ben Davis apple tree do not show any signs of disease, but are enormously developed fruit spurs. The extra large size is probably due to a rich soil and warm, moist weather in the fall, which forced more than the usual amount of sap into these twigs. The apple always produces fruit on spurs growing from the mature branches, and these spurs remain productive for many years, if not broken off when gathering the fruit or in pruning the trees. The spurs you send indicate good health and vigorous trees.

The Great Florida Freeze.—Edmund H. Hart, Putnam Co., Florida, writes: From present appearances, two or three years must elapse before I shall be able to ship fruit in any large quantities again. Never could I have believed that such a brief and trifling visitation of frost could have worked such wide-spread disaster. Everything in a growing state was either killed or severely injured. Budding fig trees, maples and hickories were cut down. About all the bloom and young growth on the orange trees, and many small limbs are dead and withered. Flourishing young trees two or three years budded will have to come from the roots. And yet at Racey Point, five miles below us, and at Oak Villa, on the opposite side of the river, where a slant of easterly wind came to them over the water, the trees are white with bloom. I am told, also, that in the Putnam Co. lake region, and about Leesburg, but little damage was done, while poor San Mateo was wiped out. I feel very thankful that we have something left. One year's faithful attention to the bearing trees, and two or three to the young ones ought to put things *in statu quo ante bellum* if the sprouts come out vigorously. Many mandarin and tangerine trees

escaped with but slight injury. As soon as the trees have sprouted out enough for us to know where to work, I shall go to cutting back severely, and endeavor to restore them as soon as possible.

Hens Laying Bad Eggs.—W. L. Candee, Milwaukee Co., Wis., writes us that he has a fine flock of Plymouth Rock hens which have been laying plentifully for the past three months, and are in good condition, but he has discovered that the eggs are not good, as out of every four one is bad, and they have a musty smell. This is the case with the freshly-laid eggs even. He desires to be informed as to the cause, cure and prevention. This is the first time we have ever heard of a hen laying "bad eggs." Eggs may become injured in flavor by something eaten by the hens, but it is impossible for the hen to contain eggs not fresh, or rather bad without death to herself. The probability is that the hens have access to something deleterious, without the knowledge of the owner, manure water, perhaps. We have known instances that hens were fed with corn that had been treated with camphor. The smell and taste permeated the eggs, and the entire flesh of the fowls, and was strongly perceptible even after they had been roasted.

Caraway Culture.—A. C. Brandt, Muscatine Co., Iowa. Caraway is not cultivated to any extent in this country, but there appears no reason why it could not be grown here as successfully as in Europe. The seed is sown in drills in May or June exactly like carrots. When the young plants are strong enough they are thinned out, and all that is required afterward is to keep the ground free from weeds until the crop is gathered in July of the following year.

Western New York Horticulture.—The report of proceedings of the thirty-fifth annual meeting of the Western New York Horticultural Society is a handsomely printed pamphlet of 192 octavo pages, replete with interest to every one interested in horticultural pursuits. A peculiar interest attaches to one of the papers presented, being a historical sketch, by Hon. Lewis F. Allen, of pomology in Western New York. John Hall, 406 Wilder Building, Rochester, N. Y., is the secretary of the society.

Soil for Tobacco.—Harland Leman, Linn Co., Kansas: In choosing between a rather light sandy soil, a medium, and a very deep black sandy loam for tobacco, we should not hesitate to select the last-named. Tobacco is a rank feeder and does best in a deep, rich soil, with plenty of potash

Substitute for Plaster.—Galen Wilson writes: There was no land plaster in the local market at the time needed for the purpose, and it became necessary to use water lime to mix with Paris green to destroy potato beetles. It proved to be preferable. Moisture of the dew "set" the lime on the foliage and heavy rains did not wash it entirely off. The operation had to be repeated only on new foliage. A small proportion of ashes was added to the lime.

Ticks on Sheep.—Charles Higgins, Isabella Co., Michigan: The ticks which were so troublesome to your flock doubtless left the mature sheep after shearing and attacked the lambs. If the latter have not already been dipped, lose no time in dipping them in some approved mixture. There are many of these, among which a strong decoction of tobacco stems is one of the cheapest. Inquire of your neighbors what sheep-dip they use.

Horse-Mane Comb.—R. C. Cook, M. D., Door Co., Wisconsin: The comb described and illustrated in our April number is designed merely for straightening out the hair of horses' mane and tail, and not to soothe the irritated cuticle. Your recommendation of kerosene and lard to be well rubbed in is excellent in cases of irritation and rubbing.

Delaine Merino Sheep Breeders.—The leading breeders of Delaine Merino sheep, principally located in Western Pennsylvania and Eastern Ohio, have effected an organization under the title of the Pennsylvania and Ohio Improved Delaine Merino Sheep Breeders' Association. W. J. Rhodes, of Pataskala, O., is president, and S. M. Cleaver, of East Bethlehem, Pa., secretary. The object is to promote improvement in the Delaine type of Merino sheep, giving them better surface, more density, more weight of fleece and better quarters. A register will be maintained, to which the conditions of admission will be not only pure Merino blood, but also individual excellence.

The Season in Indiana.—Mr. John J. New, Boone Co., Indiana, writes us that the spring came in slow there on account of excessive moisture. The ground was in bad condition when oats were sown; wheat very unpromising and much of it plowed up; clover is in good condition and a large breadth sown this spring; pigs doing well; but not other stock. The stock of corn and forage crops was fed out very closely during the winter.

What Should the Experiment Stations Do?—If we were to conclude from the demands already made upon them, the experiment stations should do everything. It is a good sign that the farmers and gardeners take the trouble to write long letters of inquiry to the workers in stations, but they must remember that a newly established station for experimental work can not answer questions at once that require a long term of years for an investigation. But the question at the head of this article needs to be answered. It does not seem wise for the station, while it is very limited in its means, to go into the experimentation for facts, as such, as much as for principles. Let this point be illustrated. Any farmer can determine for himself many things in a more satisfactory way than could the station if it had a hundred times the facilities it now possessed. Under this head come all those tests for best sorts for particular soils and special localities. The station would work at a great disadvantage if not foolishly if it attempted to determine what would be the best variety of bush beans for Mr. Jones to grow in the suburbs of Jonesville. The more general problem of the relation of beans to particular soils and fertilizers may more properly come within the province of the station. With the solution of these, the farmers and fruit growers are ready to make the application of the principle deduced. The station is designed to do these things for the crop growers that from lack of resources, time, apparatus, scientific training, etc., they are not able to do for themselves. A station that adheres to this principle, while not making any great present sensation, will be working for the permanent good of the farmer's cause.

Egg-Shell Vases.—Susan and Gussie Brooks, Philadelphia, Pa.: Water colors are better than oil for painting the egg-shell vases described in the April number of this magazine. The designs may be traced with sharply-pointed chalk crayon, as pencil marks will show through the colors.

Retired.—W. H. Ragan, who has long and acceptably filled the office of secretary of the American Horticultural Society, has felt compelled by ill health to decline re-election and to resign the office. Prof. E. A. Popenoe, of the Kansas Agricultural College, has been appointed to fill the unexpired term. He had previously been elected secretary for the ensuing term. Prof. Popenoe will therefore edit and supervise the publication and distribution of Vol. IV of the Society's proceedings, which include the meeting last winter at Austin, Texas.

Horse Show in Berlin.—A grand horse show is to be held in Berlin from the 12th to the 22d of June. This is the first general horse show ever held in Germany, and will embrace all classes of horses bred in the empire.

Poor Prospects for Fruit in Georgia.—Under the date of May 1, Mr. P. J. Berckmans, president American Pomological Society, writes us: The peach orchards are in a sad condition. More than half of the trees in this State are dead, and those that are alive show some sickly bloom. I have never seen such a havoc.

Range Cattle in Arizona.—John D. Emersley, Cochise Co., Arizona, writes us: Nearly all of the two and three-year-old range steers in Arizona and New Mexico will soon either be sold or shipped. Buyers from Kansas, Missouri, and Nebraska are visiting ranches quite distant from railroads, and doing prompt business. One gentleman from Kansas City had 3,000 head waiting in Arizona alone a week or two ago for shipping-cars. The grass in southern Arizona is in many places very scant, and stockmen are prudently reducing their herds even if prices are low. Owing to competition there has been a slight advance in figures, particularly where cattle are in good condition. Some of the larger owners have secured pasturage in Kansas and other States, where they will fatten their steers for market. With heavy winter losses in Nevada and Oregon, and few feeders left on southeastern ranges, it looks as if there might be a scarcity of beef-cattle a year or two hence.

Meeting of Nurserymen.—The fifteenth annual meeting of the American Association of Nurserymen is to be held in the Park Avenue Hotel, New York, June 4th, 5th and 6th. Reduced railroad fare and hotel bills have been secured by officers of the association for those who attend the meeting. The essays and discussions will be full of value not only to nurserymen but all others interested in horticulture. Circulars and full particulars may be obtained from the secretary, Mr. Charles A. Green, Rochester, N. Y.

Alderney or Jersey?—Isaac Baysen, Cape Colony, South Africa: There is a slight difference bebetween actual Alderney cattle and Jerseys, the former being somewhat smaller. But there are very few real Alderneys off the island of that name—nearly all which are so-called being Jerseys. The name Alderney was misapplied to Jersey cattle when they were first brought from the island and the misnomer has stuck to them since to some extent, though the public are learning to call a Jersey a Jersey and not an Alderney.

Memorial Services.—At the Michigan Agricultural College impressive services commemorative of the late Dr. George Thurber were held in the chapel, April 20th. Addresses on the deceased as a botanist, as a teacher, as a man and friend, were delivered by President Elliott and other members of the faculty, a paper by Dr. F. M. Hexamer on Dr. Thurber's work as an editor and another from Prof. A. N. Prentiss were read. The addresses were interspersed with appropriate music and other exercises.

Canna Robusta.—For beauty of foliage but few plants compare with this. In clumps on the lawn, or for hiding unsightly fences it is, without exception, the first on the list of sub-tropical plants. In deep, rich soil, this variety will attain a height of twelve feet, the leaves being more than four feet in length and one and a half feet wide, of a rich bronze color. This species rarely flowers, and if for increase of effect flowers are wanted a row of the dwarf cannas can be planted in front, which will not only give flowers in abundance the entire season but will add to the magnificent richness of the background. One great charm of the canna is that its foliage remains perfect the entire season; it rarely splits as is the case with the caladuines and some other sub-tropical foliage plants.

Hen Manure.—D. D. Dawson, Beaver Co., Pa. Your method of treating the droppings of the poultry-house, by mixing at frequent intervals with dry dust and then keeping it packed in tight barrels until wanted for use, is an admirable one. Such manure is good for any crop, though it will probably bring less return on clover, beans, or peas, than it will on corn, small grains, or as top-dressing for meadows.

Sub-Earth Ducts.—The method of cooling dairy rooms by air admitted through sub-earth ducts had some popularity a few years ago, but seems to be neglected since. The duct was a covered passage five or six feet below the surface and fifty to one hundred feet long. No air is admitted to the room except what comes through the duct becoming cooled in its passage to the temperature of the earth. The system involves considerable initial outlay, the duct is liable to cave in, and we believe a patent is claimed upon the method.

Wornout Pasture.—C. G. Shenk, Dauphin Co., Pa.: The best grass for permanent pasture is blue grass in every situation that is adapted for its growth. Orchard grass starts early and produces largely, but when it is not kept mown down it runs to tussocks. Where blue grass does not succeed, a mixture makes a thicker sod than any one kind alone. Meadow and sheep fescues, redtop, crested dogstail and perennial rye-grass are all good for this purpose. Timothy, though one of the best grasses for hay, is not well adapted for permanent pasture.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

JUNE, 1890.

New Home of the American Agriculturist.

On the first of May the AMERICAN AGRICULTURIST was removed from No. 751 Broadway to the new brick building, Nos. 52 and 54 Lafayette Place — one block east of the former location. The engraving herewith represents the front of the new building, accompanied by a map of its immediate surroundings.

As will be seen the new location is in the literary center of New York. Contiguous to one side is the great Astor Library, on the other the stately new Clinton Hall building of the Mercantile Library is nearing completion. In the next block to the east is the Cooper Union, dedicated "to science and art," with its library, reading rooms, public halls and schools of art and science; a little farther away are the Bible House, the headquarters of the American Bible Society, the University, the Society Library and the rooms and library of the Historical Society. The district embraced within the limits of the map is also the center of the publishing business of the city. The greater number of the publishing houses of New York are within a radius of less than one-fourth of a mile from the new home of the AMERICAN AGRICULTURIST. In fact, this building was specially designed for publishers, and also contains Charles E. Merrill, & Co., school book publishers, and the Critic Company. The building is a plain, massive structure without any attempt at architectural ornament, but built with a view to safety, comfort and convenience. It is as absolutely fireproof as the nearly total absence of combustible material can make it. The floor-beams, posts, window shutters, elevator frames, stairs and hand rails are of iron; the treads of stone, and the ceilings of hollow tiling. The furniture and other combustibles of any one floor might be consumed without seriously endangering any other part of the building. It is provided with steam heat, ample light, ventilation, water supply, freight and passenger elevators, and every convenience suggested by skill and experience.

OUR NEW HOME.

1. The new office of the AMERICAN AGRICULTURIST. 2. The former home, 751 Broadway. 3. Astor Library. 4. Mercantile Library. 5. Cooper Union. 6. Bible House. 7. Society Library. 8. Historical Library. 9. University of the City of New York.

The new office, though removed just out of the roar and confusion of the great business thoroughfare, is one of the most accessible in the city. It is within easy reach of the University Place, Broadway, Third Avenue, Fourth Avenue, Astor Place and Second Avenue, and Christopher Street Ferry horse cars, as well as the Third Avenue elevated railroad, which has a station only two blocks away.

When the AMERICAN AGRICULTURIST was started in 1842 in Water street, Lafayette Place was occupied by the residences of wealthy and fashionable people. The Astor Library was founded in its present quarters: within less than a decade the Astor Place Opera House was acquired as the home of the Mercantile Library; the Cooper Union and Bible House followed. The AMERICAN AGRICULTURIST was removed in 1881 to No. 751 Broadway, and there was an exodus of publishing houses from down-town parts of the city to the district between Bond street and Twenty-third street, in the center of which are situated the great libraries. The jubilee year of the AMERICAN AGRICULTURIST now near at hand will find it located in the literary center of the city in quarters unsurpassed for convenience, comfort, safety and accessibility. Here we shall be pleased to receive our friends and readers at any and all times.

The great book business of the Orange Judd Co. is of course also to be found in the new location. In addition to the large line of standard works on agriculture, horticulture, and rural life, the Orange Judd Company from time to time brings out new works of standard value or revisions of present books, and is the recognized headquarters of the English-speaking world for every description of literature pertaining to rural life.

The Agricultural Papers and Low Prices.

A correspondent thinks low prices of farm produce are caused by overproduction, and that agricultural papers, by recommending the use of fertilizers, improved implements, and better cultivation, as well as by their rose-colored views of the pleasures and profits of farming, and by urging "young men not to leave the farm," are responsible for this overproduction. "In England," he says, "the tone of the agricultural papers is entirely different from those of this country. There the papers are filled with complaints of the unprofitableness of farming, while here a stranger who picks up a copy of an agricultural paper would think that he had only to buy or rent some land to find himself rich." There is some truth in all this. In England nearly all the land is occupied by tenants who pay cash rent. They do not wish their landlords to think they are making too large profits, for fear that the rent would be raised. Here there is nothing to be gained by crying poverty, and we remain quiet. There are sections where efforts are made to boom farm, village, and city property, and large stories are told of the productiveness of the land and the profits of farming. But there is very little of this at the present time. The prevailing disposition is all in the other direction. Our correspondent further says: "We have Agricultural Experiment Stations in every State, supported by the government, or in other words, by a tax on the people. Bulletins are issued, and everything is done that can be done to increase the production of farm products. Agricultural papers, Experiment Stations and their Bulletins, Farmers' Institutes, State Boards of Agriculture, the National Department at Washington, one and all, are doing their best to increase the crops and thus still further to depress prices and curtail the profits of farming. When will this thing stop?"

At first we thought our correspondent was joking, but he is evidently in earnest and is consequently entitled to a respectful hearing. We have stated his views fully and clearly, and will admit that there are

agricultural papers that are open to the charge he brings against them. As a rule, they are papers whose editors seem to think that farm experience is worthless and theory everything. These papers get into the hands of young men on the farms and into the hands of discontented men in cities and villages. We constantly meet or hear from such men. They propose to turn farmers, and are going to revolutionize agriculture by building a silo, or keeping this or that breed of animals, or feeding "well-balanced" rations, or by starting a variety of potatoes that will yield 1,000 bushels per acre, or a variety of corn that will produce two hundred bushels per acre; and when you try to bring them down to the level of common sense and common experience they smile and think you are an old fogy. We can not think, however, that such papers can do much toward stimulating "overproduction." So far as their influence goes, of course, they do harm. They encourage people without experience or capital to turn farmers, and if there is overproduction it is in products that farmers without capital are obliged to raise —something like wheat—that can be immediately turned into money.

But it is a great mistake to suppose that the object of a good agricultural paper is simply to increase the production of farm crops. Its object is to show how to maintain or increase the fertility of the soil and render farming more profitable. This can be done by raising more and better stock and feeding more grain. With the exception of pork, our average meat is wretchedly poor, and it is the glut of inferior animals that depresses the market. Corn—the best food in the world for fattening cattle—is used for fuel, while half-starved steers are slaughtered by thousands and tens of thousands.

The agricultural press is doing its best to correct this evil. If there is more wheat grown than can be eaten we must stop raising so much. This result can be brought about only by low prices.

Our correspondent says there are too many farmers. By the aid of improved implements and machines one man on the farm can now do as much actual work as two or three could accomplish a generation back. This is true. But it is equally true of nearly all other occupations. Manufacturers say there are too many manufacturers; merchants say there are too many merchants; clerks say there are too many clerks; laborers say there are too many laborers; and farmers say there are too many farmers. Are there too many people in the world? Is there not enough work to keep us all out of mischief? If not, let us see what can be done toward improving our country roads.

The Outlook at Washington.

Much attention is being directed during the present session of Congress to agricultural matters, yet little is being said with reference to the Department of Agriculture. Secretary Rusk's report to the President showed very clearly that he had given the needs of the Department careful, common sense consideration, and the farmers of the country are necessarily much interested in knowing whether Congress will guarantee to him all that he needs in order to effectually carry out his plans. It is certainly worthy of note that the Department of Agriculture of the United States receives from the National Treasury a less sum in proportion to its population, and still more to its agricultural population, than probably any other civilized nation appropriates for similar purposes.

Criticism of the department is perfectly proper and has been frequently meted out in these columns. In a country where the people govern it is right that the people should exercise a close scrutiny of the work done in every department of its government, but it is also proper that the people should see that those other servants of theirs who represent them in the matter of legislation and appropriations provide each department with ample facilities and means for the performance of the duties imposed upon them. The Department of Agriculture has always had its full share of criticism, but it is equally true that it has never yet enjoyed its full share of facilities and means for carrying out its objects.

Our farmers evidently thought when the head of the department became a Secretary of Agriculture and a member of the President's Cabinet that the exalted rank conferred upon the chief of this important department would, in some inscrutable way, guarantee sufficient means and all the legislation necessary to secure to the department ample powers for good. But this apparent prestige is not enough. A great many of our Congressmen are thinking exclusively of re-election, and with this end in view are giving more attention to the individual wants of their constituents, especially of such as they regard as influential persons, than to the public weal. Again, such economic legislation as the tariff and currency bills and the general agitation created among the farmers in a great many States by agricultural depression are absorbing so much of the time and attention of both farmers and Congressmen that there is a little danger lest the wants of the Department of Agriculture be overlooked.

This is the first session of Congress which has been attended by legislative committees representing the farmers as a whole, such as the Grange and Farmers' Alliance committees now in Washington. We trust these gentlemen will bear in mind that with all the good work they are accomplishing the interests of the Department of Agriculture must not be forgotten. For all they may be able to accomplish in the way of strengthening the Secretary's hands for next year's work, they will earn the gratitude of farmers throughout the country.

The recommendations in Mr. Rusk's report, so far as the department is concerned, have met with hearty approval. The means for carrying them out should now be granted. The farmers in their various organizations are watching their interests in Congress as never before. They will brook no oversight of the Department of Agriculture, even if unintentional.

Obituary.

JOHN PAYNE.

A bright and promising career was sadly ended by the death on April 15 of John Payne, a young artist connected with the AMERICAN AGRICULTURIST. Mr. Payne was born in England, and came to New York in his boyhood. At the age of sixteen he entered the art department of the AMERICAN AGRICULTURIST, where he soon showed a high degree of artistic talent. From that time until his death, at the age of twenty-two, his progress was rapid. Before he was twenty years old he had attained a recognized position as an artist and illustrator. Of the quality of his professional work during the past three years it is needless to speak to any who have observed in these pages the illustrations bearing his name. He was a close and constant student, devoting his days with enthusiasm to his profession, and his evenings to study in the higher branches of art. This incessant and exacting application to work and study undermined a constitution which was never robust, and induced the rapid decline which sent him to an early grave.

Personally, Mr. Payne was a young man of very lovable character. He took an active part in social and political affairs, and won a wide circle of friends.

HON. LEWIS F. ALLEN.

This veteran agricultural writer and eminent citizen died at his home in Buffalo, N. Y., May 2, at the age of ninety years. He had resided in Buffalo for more than fifty years. He was elected to the State Legislature in 1838, and was a power in that body. But it was as a writer on live-stock and agriculture that he did his most important work. He projected and for many years edited and published the "American Shorthorn Herd Book." On some of the early volumes of this he received and gracefully acknowledged the assistance of his "young relative, Grover Cleveland," afterward President of the United States. Mr. Allen also wrote a work on "Rural Architecture," and, in collaboration with his brother, the "American Farm Book". His great work on "American Cattle" has long been standard. He had just completed revising this for a new edition, which was in press at the time of his death.

Mr. Allen was a frequent writer in the pages of the AMERICAN AGRICULTURIST from the first year of its existence to within a few weeks of his death. A portrait and brief sketch of him and his work were pulbished in the AMERICAN AGRICULTURIST for January, 1889.

Mr. Allen was born in Massachusetts, and removed to Buffalo in 1827. He was married in 1825 to Margaret Cleveland, a sister of Grover Cleveland's father. She died several years ago, but a son and daughter survive him.

Test Seasons.

Now and then comes a season that tries the very soul of the farmer. It tests his patience and his pocket-book at the same time. Sometimes it is an extremely cold winter that becomes a test of the hardiness of the varieties of fruit and ornamental trees, shrubs and perennial herbs. This is particularly true in the great central prairie region of our country known as the West, and particularly the Northwest. But the East is not exempt from its test years and its trying winters. All last summer we were rained upon to the tune of double the average amount for most of the months, until water was everywhere. Then followed a winter so mild that, with all the excess of water, ice would not form, and the standard crop of the Maine lakes is in demand everywhere. Frost has been almost a stranger to us, and nearly every day has brought some new buds of wild or cultivated plants into bloom. But last of all is "the freeze," as it will be set down in the calendar of the eventful year—the *la grippe* year in America!

We can not help ourselves, the people tell us, for the weather is a condition over which we can have no control. To this, protest is entered in part at least. It can be shown that advantage may be taken of a test season to learn some things of no small importance, and things that can be learned in no other way. A test season may be among the most fruitful in facts, and therefore should be made the most of when it comes.

Many peach buds were killed by the cold snap in March, and careful examination has demonstrated the fact that location of the tree has had something to do in the matter. The age of the tree also has some influence, perhaps. Now the point is simply this: While the opportunity is given it is important for every person who is personally interested in the matter to make a thorough record of the results of the cold snap. Such information is most valuable when measured by the yardstick of practicality. If the variety of the peach has anything to do in the matter, that is now, this season is the time to arrive at valuable facts upon that point. We may expect a warm winter any year, and, therefore, we need to lay in a store of knowledge against such test seasons.

Then there is the question of soil. In some localities the soil changes quite decidedly, sometimes within a few rods, and here is a factor in the problem of profitable peach growing that should be considered when the cost of knowing is almost nothing. Many will make the notes in the little book, but it is to those who do not think it worth the while that these words are written.

Exposure upon the side of a hill may come in here as a modifying element in crop production. There may be all the difference between a good and a poor crop in the locality and exposure of the orchard. It would seem true that the orchard upon the southwest slope would suffer most from a warm winter. We know that upon some such were found the first open flowers as early as January 3 in central New Jersey. There are many other matters in connection with the past winter that merit attention. But let it not be forgotten that a season out of the ordinary run may yield a rich harvest of experience provided it will be gathered. If we lose our peaches and pears, or a part of them, let us try to know why, and, if possible, use that knowledge to save the crop in the future.

ANIMAL AILMENTS.

Roup in Fowls.—Mrs. A. V. Jasper, Rice Co., Minn., has recently purchased a lot of fowls, and after keeping them inclosed in a small yard for a month or so finds that many of them sneeze and cough, and have a discharge from the nose and eyes, and that they are too poor to eat. The disease is roup, and by separating and turning out the healthy ones—but not with healthy fowls—and, cutting the heads off the sick ones and burying them deep, the cure will be quick and sure. It may not make a human being sick to eat a roupy fowl, but it is a disgusting practice.

Salt for a Cow.—Jesse Easterly, Napa Co., Cal., has a cow that has been a large milker, but during his absence for a week the milk fell off nearly one-half in quantity. The cow does not drink half a pail of water a day, and the milk is thick and has a peculiar taste. He wishes to know what will make her drink. Salt is the remedy. Cattle should have large pieces of rock salt in the feed box in the yard and in the pasture. Salt is the medicine Nature supplies as a preventive of disease, as a promoter of digestion and assimilation of food. Water and salt are as indispensable as food. They are the chemical agents in the grand laboratory. Without these two agents none of the animal functions can be properly performed.

Care of Hogs.—Jacob Hoff, Union Co., N. C., has a peculiar trouble with his hogs. He has in one pen six, in another nine, and thirteen young ones running in a good-sized yard. He puts litter in the pens every week, and after slaughtering his hogs he cleans out the pens and puts in another lot. His fattening hogs have not done well for a couple of years and he wishes to know how to correct the trouble. Put half the number of hogs in the pen, clean the pen twice a week, give the hogs cooked meal, in which a little salt is added before cooking. Give a feed of bran and middlings, slop and fresh water every night, and you will probably have healthy hogs and good, sound and sweet pork. Naturally hogs are neat, especially in their beds.

Trouble With Cows.—Joseph Hinds, Los Angeles, Cal., writes us that at considerable expense he has purchased a small herd of Guernsey cows and they do very well, all except the best cow he has. She has aborted twice, and this year a young heifer aborted. He asks, "What shall I do?" Separate the aborting cows from the herd. Keep the yard and stalls scrupulously clean, feed no rye, and if there is any further trouble slaughter the aborters. It may be that dogs worry the cows or that cruel help kick and maltreat them. Pregnant animals should be cared for in the kindliest manner.

Week-Kneed Colts.—Jeremiah Calhoun, Uintah Co., Utah, has twin colts of fair size, out of a good dam and by a pure-bred Percheron, that seem to be weak in the knees. In one it is scarcely noticeable, but in the other the knees bend back at the joints. Neither parents are affected. It is simply weakness. As soon as the colts will begin to eat cracked oats feed them regularly. It requires but little patience to teach them to eat. Girth them and daily hand rub the forelegs from the body down and they will soon become straight and strong. You will have your colts broken young by gentle handling.

Fits.—Almost any of our animals may fall in a fit. It is especially alarming when a horse falls in harness or under the saddle in a narrow or obstructed road or place, trembling and writhing in convulsions. The first thing to be done is to free the animal as coolly and quickly as possible from harness and vehicle, pour cold water over the head with a steady small stream, throw a blanket over the body, and if the animal struggles protect it with straw, litter or blankets from injury. Great care should be exercised to avoid personal injury as the animal is violently moved by internal irritation of the brain or nervous system or of the stomach depressed with indigestible food. If the recovery is immediate no medical aid need be sought.

Pleurisy.—This ailment arises from cold draughts to the chest when the horse is overheated by fast driving. It is easily known by the indisposition of the horse to move the chest by deep breathing or by indisposition to turn, and by fever, cough and grunting if the fist even gently strikes the sides of the chest. The horse breathes with the abdominal muscles. Cover the chest with thick old blankets or cloths dipped in very warm water, shut the horse in a warm, dry box-stall and cover him with dry blankets over the whole body, hot wet blankets and all, and send for the veterinarian.

Horse Whims.—Some delicate feeding horses have queer freaks. It requires as much patience and skill to manage such horses as it does to manage some delicate, pampered and spoiled children. Some of these thin-skinned, long-legged, slab-sided, pale-colored, coatless horses for a time reject food altogether if given too plentifully, too sparely, too cold, too hot, too coarse, too wet, too dry. Some must drink before eating, some at intervals while eating. Some of these horses will not eat in company, some insist upon company. Some are so timid that a horse in the next stall prevents their feeding. Some tire of oats, bran, meal, hay. Such horses require a variety of food. Carrots will be taken by nearly all. As a rule delicate feeders are equally delicate workers and prefer short drives. It is advisable to get rid of these horses or any animal of the kind. Although for an honest and honorable man trading horses seldom proves profitable, yet the chances with delicate horses are two to one that the trader of the delicate horse will have the best of the bargain. To save trouble and time a few lines specifically written, signed and witnessed will also prove of service. It may be possible for a truly Christian gentleman to trade horses without seriously impairing his manhood.

Collar Gall.—From heavy tongues of wagons and those of other farm implements a peculiarly painful sore is produced just where the top of the collar bears. First, the mane is worn off and then comes a disagreeable sore, which is kept raw and painful until the poor horse can not bear to have a collar brought near him. It is at such a time that a rough, cruel brute of a man often makes a horse so afraid of being harnessed that a distressing scene is gone through at every harnessing, to the injury of the horse and the moral degradation of the human brute. Gentle and thorough washing at night with castile soap and water and the adoption of an iron collar shield will soon remedy the evil. But as prevention is more satisfactory than the cure, the collar should be a little longer than just to fit the neck, and the collar shield should be worn. It keeps out the dust and rain and prevents the chafing. As a rule it is best to have the collar closed at the top, although this necessitates the putting the collar over the head, but this and every part of the harnessing should be done gently, so as not to give the horse pain or to frighten him by roughness. Mowing and reaping machines are heavy for the team to hold up, and when used a little kindly forethought will give the neck proper protection.

Best Size of Cows.—A. P. J., Albany, Linn Co., Oregon, wishes to know "whether the size of cows is of special importance." The great cows of every breed which have been tested for milk, butter or cheese production have been relatively large cows. Wherever any cows have been purposely and judiciously bred up to fair relative size, all things being equal, the product has been increased. A peck measure only holds a half bushel when twice filled, and one-half bushel measure costs less than two peck measures. It costs less to feed one cow of twelve hundred pounds weight than two cows of six hundred pounds each. It is more profitable to have "two cows in one skin," if it is possible to procure cows of that make. Overgrown cows or animals of any kind are not meant, but large animals as a rule are less expensive to feed than small ones. The food is largely consumed in the support of the animal, and the excess over this goes to product. And it is here where a comparatively double quantity for self-support becomes largely in excess in two small cows over one large cow of the weight of the two. In tests the quantity of food consumed and the product yielded must be taken into the account. The net profit is the desideratum in all tests. The food of maintenance is that which is consumed to support the animal. Feeding for product is that which is over and above that necessary for maintenance. We do not feed animals to just keep them alive, but for profitable product. It is herein that farmers and dairymen, and too often breeders, fail to appreciate the value of proper and liberal feeding. No animal can yield profitable product without liberal feeding, whether it be meat or milk, labor or speed. It is equally true that more profit results from keeping relatively large stock than of relatively small.

Acute Tympanitis: Hoven-blown, dew-blown, fog-sickness, grass-sickness, blasted, puffed-up. From the sudden, and too often fatal, attack the proper method of prompt and perfect relief should be in the hands of all cattle and sheep owners. The cause of hoven is the rapid fermentation of young and juicy grasses, greedily bolted with excessive swallowing of air, without proper and thorough mastication. Turning cattle and sheep into young and thrifty fields of clover, lucern, or other juicy young grasses when the animals are hungry, or half starved on poor pasture, is the most frequent cause of this affection. Where the change from a poor to a rich growth of young grasses is necessary, half an hour or thereabouts is long enough at a time, till the stock becomes less greedy and more thoroughly masticates, and feeds with more leisure. This condition will at once be apparent to any casual observer, as the

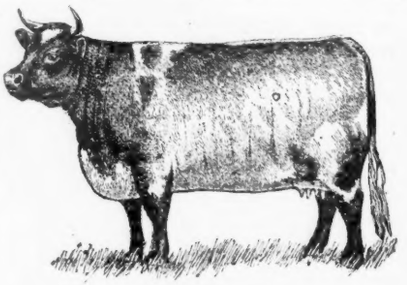


FIG. 1. COW SUFFERING FROM HOVEN.

animal is enormously puffed out on the left side and flank, stands immovably with head extended and bloodshot eyes, breathing heavily, moaning, and frequent stroking the belly with the hind feet. If not immediately relieved, all the symptoms become aggravated, and the poor brute falls and dies from suffocation, owing to the diaphragm being forced against the lungs. It is because of this imminent danger of delay resulting in great suffering and sudden death that prompt relief must be given without waiting. Medication is too slow and uncertain. It is in such cases that a safe, certain and reliable operation, and even in the hands of a common farm-hand, or herdsman, will prove the value of domestic surgery. Fig. 1 shows a cow suffering from hoven, with the indication of the place where the knife or *trocar* should puncture the rumen or paunch, should be a hand-breadth forward of the point of the hip, and the same distance below the backbone and back of the last rib, thus: four

FIG. 2. TROCAR AND CANULA.

inches below the backbone and midway between the last rib and point of the left hip. The instrument should be firmly, deliberately, and forcibly pushed downward, inward and forward, to the depth of at least three or four inches, when the accumulated gas will escape. The canula or sheath of the trocar should be left in the puncture to permit the gas to escape for a time, and for the introduction through it of half an ounce to an ounce of aromatic spirits of ammonia in half a teacupful of warm water once an hour till the animal recovers. Half the quantity for sheep. Then give a pound of linseed oil by the mouth. Fig. 2 shows trocar and canula. Fig. 2 shows the trocar and canula ready for use. The trocar only is withdrawn. This trouble is of so short duration and the emergency so great that no time can be wasted to summon a veterinarian. In all similar emergencies the owner, or employé, or farmer must practice one of many arts.

Plain Common Sense.—I am frequently asked what do you want with an agricultural paper here in this city of Washington? To which my answer is: I am partial to plain common sense, and I find more of this on every page of the AMERICAN AGRICULTURIST than in all the papers I have ever seen. MRS. MARY W. PRESTON, D. C.

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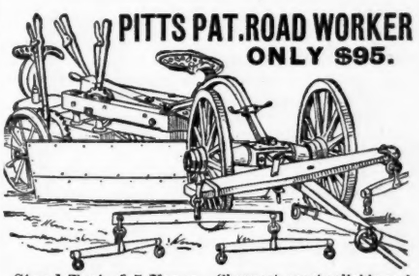

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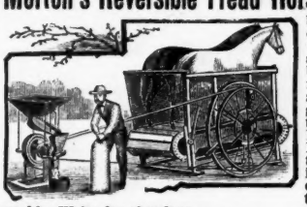

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TOPICS OF THE TIMES.

Again Agricultural Depression.

This topic continues to agitate the public mind: J. Florenfelt, of New Jersey, regards the tax and tariff agitation as only a blind to distract attention from the lack of sufficient currency due to improper legislation, especially the act of July 14, 1870, whereby a vast issue of government bonds at four per cent are redeemable only "after" thirty years from date, although he and others claim that the law as approved read that the bonds were redeemable "for" or at any time within thirty years. He believes that with equalized taxes and sufficient money in circulation the problem would be solved. Edwin B. Haven, of Colorado, represents a constituency of no small proportions when suggesting the issue of money (treasury notes) direct to the people without the intervention of banks. I. W. Porter, of Virginia, shows up the money question in a different light in a powerful presentation of the arguments in favor of the complete remonetization of silver, the importance of which he says is fully appreciated in the West and South, but not in the North. J. F. Gibbs, of Orchard, Col., points out that a certain amount of revenue is required for government maintenance; if not paid by duties it must be met by internal or domestic taxation. "The English farmer knows something of what such taxation means when called upon to pay a tax of $10 per acre, or $25 per acre for both rent and tax—$1,600 taxes per quarter section of land." Hon. J. M. Rusk, the Secretary of Agriculture, has issued what is designed to be a comprehensive pronunciamento upon the subject, copies of which may be had upon application to him at Washington. His chief point is that our consumers now pay as much annually for imported farm produce as our farmers receive for crops exported. Consequently we must so diversify our agriculture as to ourselves supply what produce is now received from abroad. Secretary Rusk maintains that it has been demonstrated that all such foreign produce, tea and coffee excepted, can be successfully grown in the United States if protected equally with manufactures. W. H. Smith, of Minnesota, voices the sentiments of numerous correspondents in his exceptions to John M. Lane's suggestion (in the May issue) that the talk favoring more farmers in legislative bodies is "silly twaddle." Mr. Smith holds that such advice is on a par with that of the politicians or favored classes who want the farmer to stick to his work, produce the wealth, pay the taxes and carry the burdens of government without bestirring himself to secure representation. It is because farmers are the great producing body, Mr. Smith wisely argues, that they should be specially vigilant in doing their duty as citizens and in qualifying themselves for this duty. The above epitome and the views expressed by our numerous correspondents in the April and May numbers of the AMERICAN AGRICULTURIST give an excellent insight into the divergent opinions regarding this important question. The discussion, inaugurated in this magazine, has been continued at great length in numerous publications and reviews, and has arrested the attention of Congress.

Note and Comment.

Horse Lore.—A catalogue containing among other things much useful information about the horse and its diseases is issued by the Pioneer Buggy Co., of Columbus, Ohio. It is sent to any address upon receipt of six cents in stamps.

Native Rhubarb.—J. Binsen, Coos Co., N. H.: The native rhubarb or pie-plant is found growing wild in Utah and westward to California, in both moist and dry ground. It was first described by the late Dr. John Torrey, under the name of *Rumex hymenosepalus*, but a few years later it was found wild in Los Angeles Co., Cal., and redescribed as *R. Saxei*, in honor of the supposed discoverer in the new locality; hence your name of "Saxe's native pie-plant." The stems and leaves have a pleasant acid taste, and are often used in the far West as a substitute for the cultivated variety.

Keystone Hay Loader.—One of the most useful of the improved implements which save the heavy labor of haying is the Keystone Hay Loader, made by the Keystone Manufacturing Co., Sterling, Ill. Used in connection with the Galt side-delivery hay rake, made by the same firm, and any good horse fork, all the old terrors and hard work of haying vanish. The writer of this last summer loaded and mowed away a load of hay in just eight minutes, from swath to hay mow, by the aid of these implements. The use of these improved implements not only saves labor but also saves hay in showery weather.

Mallows.—Miss M. B., Allendale, N. J.: It is true that the Hebrew word Malluach has been translated, in the English version of the Bible, mallows, for we read: "who cut up mallows by the bushes and juniper roots for their meat." (Job XXX. 4.) But it is not certain that the plant referred to was any one of the many species now known under this name. It is said, however, that the round-leaved mallow (*Malva rotundifolia*) is extensively cultivated in Egypt as a pot-herb, and may have been in use in the time of Job, 1520 B. C. We have many native species of the mallows, and nearly all are beautiful ornamental plants, and well worthy of cultivation in gardens.

Blue Gum Tree.—J. J., Atlanta, Ga.: We hear very little of late about the Eucalyptus or Blue Gum tree of Australia, and we have been informed that this and other species of the same genus are not quite as popular in California as formerly, although still planted by those who are in a hurry to obtain shade trees of some kind. There are about one hundred and forty species of the Eucalyptus described by botanists, and it is quite possible that some one or more of the number would prove hardy in Georgia. It is stated on good authority that *E. polyanthemas* has stood for the last thirty years in an exposed part of Kew garden (Eng.), and while the young shoots are occasionally injured it is otherwise perfectly hardy. We think this species would thrive almost anywhere in the South, but we do not know that it has ever been introduced here.

Industrial Exposition in Russia.—It opened May 15, at Kazan, under the high patronage of the Czarovitch, the heir apparent of the throne of Russia. The essential object of the fair is to make known the intellectual and material condition of the provinces of eastern Russia, Siberia, Caucasus, and the recently acquired khanates of Central Asia. It embraces exhibits of the soil, flora and natural resources, archæology, ethnography, statistics of education, sanitary conditions, journalism and book-publishing, agriculture, manufactures, commerce, and all industries of the vast region embraced within the territory named above. Two grand gold medals are contributed by the Czarovitch as special prizes. There are also twenty medals of gold, forty large and twenty small of silver, and two hundred of bronze. Such an exposition of the region so little known to the general public is a notable event, and will doubtless attract large numbers of American visitors.

The Potato Crop Competition.—The great number of farmers who are competing for the $500 offered by the AMERICAN AGRICULTURIST for the largest yield of potatoes on one measured acre this year, and for other prizes offered in this competition, have their crops well under way by this time. The full particulars of the affair have been published in the previous issues of this magazine. We learn that a large number of farmers have entered the contest, however, who have not yet notified this office, and call their attention to Rule 3 which requires that subscribers must notify the AMERICAN AGRICULTURIST on or before July 1, 1890 that they propose to contest for the prizes. In addition to the very liberal prizes offered, F. O. Williams, Avoca, N. Y., will give one of Williams's Potato Diggers to the first prize crop, should it be grown in his State. He speaks highly of the merits of his machine, the price of which is $60, and challenges the world for a field trial.

Early American Farming.—Curious, Nyack, N. Y.: Very little is known of the system of agriculture pursued by the people known to us under the very indefinite name of prehistoric Americans. That there were people here many centuries before the arrival of Columbus, who cultivated the soil; built villages and cities; excavated canals; built fine roads, over which they passed to and fro to their markets and festivals, is now well known; but beyond this we can discover but little. Those who lived on the Western plains appear to have practiced irrigation very extensively; in fact, they could not have subsisted in those regions very well without it; but, so far as known, they had no other grain except Indian corn, and the charred kernels of this are often found in the pottery burned with their dead, as well as in the ruins of their ancient dwellings. They probably cultivated several varieties of beans; also pumpkins and other edible plants indigenous to America.

Forests and Rain.—J. B. M., Ozark Co., Mo.: It is often claimed that extensive planting of trees tends to increase the annual amount of rainfall, but we have no record which would go to show that such results are obtained. Forests may be considered in the light of a conservator retaining as well as retarding the distribution of moisture; but so far as known they do not in any way cause any more rain to fall upon the same area of country than would come if no trees were growing thereon. We usually find great forests in regions where there is a large amount of rainfall, but this does not prove that the forests caused it, but on the contrary trees grow where they are fully supplied with heat and moisture. Where there are no trees to break the force of the wind, moisture is rapidly dissipated and the land soon becomes dry after even a heavy shower. Springs may cease to flow when the forests are cut away, because the water falling in rains passes off on the surface instead of sinking down into the soil and vegetable matter as formerly or before the forests were renewed.

Tar Water.—Gardener, Paterson, N. J.: Insects seem to have their likes and dislikes as well as human beings, and a substance or odor that is agreeable to one species may be very offensive, and even destructive, to another. We have tried various insecticides for the common green cabbage-worm, but found none to work as well as tar-water, and this does not in anyway injure the cabbages, and all traces of the odor of tar are washed away by the first shower. To make the tar-water, put a quart or two of common coal-tar in an old tin or wooden pail and set it on the bottom of a barrel or other tight vessel, then fill up with water. Let it stand out in the sun for a day or two, and the water will become impregnated with the odor of tar, and ready for use. Apply in the evening, with a watering-pot with a fine rose, in order to distribute the liquid over the entire head of the cabbage. When the water has been used, fill up the barrel again, for two quarts of tar will last to make a number of barrels of tar-water strong enough to kill the cabbage-worms. As there are several breeds of this cabbage pest, you may have to apply the tar-water as each appears; but in dry weather a little extra watering of the plants will prove very beneficial.

The Farmers' League.—H. L. Best, Steuben Co., Ohio: This organization is designed as an adjunct or supplement to the Grange, Farmers' Alliance, and similar orders. The latter are devoted to the farmers' improvement socially and educationally, and to assist him in buying and selling. The League, on the contrary, devotes its attention wholly to politics, and aims to afford a simple form of organization through which farmers may exert, in their respective parties, the power and influence which they possess as the largest body of electors and the heaviest tax-payers in the country. In the language of the Secretary of the National Farmers' League, Herbert Myrick, of Springfield, Mass.: "The Farmers' League is designed to enable farmers to carry into practical politics the reforms they desire. Instead of grumbling at present laws and taxes, the farmers have only to unite in the League to secure for their demands the indorsement of both parties and all candidates. This being done, the election is conducted on party lines, and the farmers' interests win, whichever candidate succeeds. In short, through the League farmers can do what has been called the 'dirty' work of politics, but which will no longer be 'dirty' work when done in all parties by the respectable, conservative, and intelligent farmers and real-estate owners of the country." It is stated that the League is making rapid progress throughout the entire country, and that it has the support and coöperation of all existing farmers' organizations. The Secretary above named will give further particulars upon application.

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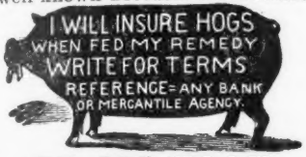

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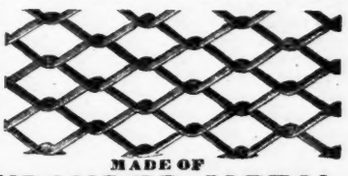

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Sent anywhere in the U. S. **On Three Days Trial.** On runners. Worked by 2 men. LIFTS 20 TO 50 TONS. Five sizes, Price, $35 to $70. Circulars free. Man'f'd by

H. L. BENNETT,
Westerville, O.

MOUTH ORGAN Chart teaches anyone to play a tune in 10 minutes. Circular 2c. Agents wanted. Music Novelty Co., Detroit, Mich.

DR. BOOTH'S PANACEA is the thing to be used first in all cases of sick animals and save loss. Wonderful! Address, Springfield, Mass.

MATTERS OF BUSINESS.

The Season's Outlook.

The statistical returns of the United States Department of Agriculture for May, relative to cotton, report the progress of planting and conditions affecting seeding and germination. Planting is late except in the Carolinas. In Georgia it is scarcely up to the average at this date, the delay being caused by drought, difficulty of plowing, and slow germination. From Alabama westward serious delays have occurred from excessive rains, overflow of bottom lands, and floods from the rise of great rivers. Replanting is necessary where the seed has rotted in the ground. Great scarcity of seed is reported in parts of Tennessee. Usually nearly seven-eighths of the cotton area is seeded before the close of April. This year only three-fourths has been planted. The proportions in the several States are reported as follows: Virginia, 55 per cent; South Carolina, 86; Georgia, 86; Florida, 87; Alabama, 85; Mississippi, 65; Louisiana, 70; Texas, 75; Arkansas, 60; Tennessee, 57. Average, 75.8 per cent. In the Mississippi river bottom lands the fear of floods, as well as actual overflows, prevents planting, which will be actively pushed as the waters subside and the danger becomes less imminent.

The official report of the condition of winter grain, May 1st, makes a reduction of one point in wheat, the average being 80 per cent. The rye average is maintained, being 93.5 per cent, and barley 84.6 per cent. Areas in which the roots were not too severely frozen have improved during the past month; in others the injury is shown to be greater than appearances indicated. Some correspondents state that it is yet too early to know the amount of vitality and ultimate degree of development of the plant. The drained fields suffered least, and mellow soils, properly prepared, escaped severe injury. Heavy clay undrained and level areas holding moisture were in many places almost totally destroyed. Hence, the heaviest decline in condition appears in Indiana and Illinois. A part of the Ohio breadth improved, while a larger part declined, causing a fall of five points for the State. A loss in condition is reported in Texas from the ravages of an aphis or plant louse. There is also a decline through the southern belt from injury by the March freeze and the depredations of insects.

On the other hand, there is a partial recovery from the very low condition of April on the Pacific coast and an improvement in Kansas, Michigan, Kentucky, Tennessee and New York. The averages of condition for the States of principal production are as follows: New York, 91 per cent; Pennsylvania, 96; Ohio, 82; Michigan, 73; Indiana, 63; Illinois, 64; Missouri, 82; Kansas, 92; California, 82; Oregon, 95; Maryland, 98; Virginia, 95; North Carolina, 80; Georgia, 65; Texas, 67; Tennessee, 82.

The condition of mowing land averages 92.9 per cent, and that of pastures 93 per cent, indicating a good prospect for medium productiveness. The reported progress of spring plowing and planting indicates an average state of forwardness of farm work, although there are local inequalities in the record. This work is relatively late in the Ohio valley, in the South West and on the Pacific coast, but is earlier than usual in the North West, and on the Atlantic coast, south of Delaware; but in the Middle States and in New England about as forward as usual.

An investigation of the wages of farm labor has been made. The monthly rate of wages has not declined. Compared with the last previous report, that of May, 1888, the average for the country is unchanged, although slight local fluctuations are reported. A scarcely appreciable increase appears in the Eastern and Middle States, and there is some increase in Virginia. There is a slight reduction of the rates of the Pacific coast region, which are still relatively high. Throughout the central areas, North and South, the averages are practically the same as two years ago. It is evident that the depression in prices of corn and oats and their products has not affected the wages of agricultural labor.

Indorsements and Criticisms.

Creamery Men.—If you have never used Thatcher's Orange Butter Color, be sure and try it at once. Every package warranted to give satisfaction. It is the most natural June tint and the strongest color made.

A Salary, with expenses paid, will come handy to any one who is now out of employment: especially where no previous experience is required to get the position. If you want a position, see advertisement on third page of cover. "A Chance to Make Money."

The Bullard Hay Tedder.—One of the greatest improvements in hay-making machinery is the new two-horse, eight-fork Bullard Tedder. Two of the forks are outside of the wheels, so that there is no running over the hay already spread. This is a valuable feature possessed by no other tedder. It is made by the Belcher & Taylor Agricultural Tool Company, Chicopee Falls, Mass.

Western Enterprise.—The Henney Buggy Co., of Freeport, Ill., is one of the great establishments which make the light vehicles of the United States famous all over the world. Every style of pleasure vehicle, from the stately landau to the jaunty road-wagon, is turned out by the Henney Buggy Co., combining beauty, the best material, and the best workmanship.

The Hoover Digger.—The work of digging potatoes, which is often one of the most disagreeable jobs on the farm, is robbed of all its terrors by the Hoover Potato Digger, manufactured by Hoover & Prout, Avery, Erie Co., Ohio. It digs any depth to which potatoes grow, throws the tops and weeds to one side, and leaves the potatoes clean and uncut.

Economical Power.—The ax and flail are largely superseded by portable saw mills and threshing machines. Among the best are those of A. W. Gray's Sons, Middletown Springs, Vermont. They manufacture machines for sawing wood with circular and cross-cut drag saws; threshers and separators for grain, and horse-powers for both. Write for their pamphlet, which is sent free.

Clark's Cutaway Corn Cultivator.—The cutaway harrow, which has won such great popularity, has now a counterpart in the cutaway cultivator, for corn or cotton. It has disks of the same make as the harrow, but they are arranged in two gangs to straddle the row, and pulverize the soil on either side. It can also be arranged for general work. It is made by the Higganum Manfacturing Corporation, 189-191 Water street, N. Y.

Cider Making.—The crude methods of the old cider-mill have been swept into the past by the presses and other conveniences made by the Boomer & Boschert Press Co., of Syracuse, N. Y. Every size of press for power or hand, together with all the accessories for making cider and apple butter is manufactured by this extensive concern. Whoever has an orchard of any importance should send to the above address for a copy of the new catalogue.

A Notable House.—The "Year-Book" of Russell & Co. for 1890 is adorned with a photographic group containing the portraits of the six Russell brothers. The book is an illustrated catalogue of the machinery manufactured by the company at Massillon, Ohio. These comprise the new thresher the Massillon Cyclone, the Massillon Automatic Stacker, portable and traction engines of various sizes, and portable saw mills.

The "Critic" Removed. — The offices of the *Critic*, a standard literary weekly, and of Charles E. Merrill & Co., publishers, have been removed from their former quarters on Broadway to Nos. 52 and 54 Lafayette Place—the same building which contains the new office of the AMERICAN AGRICULTURIST. Lafayette Place was already the home of several leading religious and professional serials, and the accession of the *Critic* will add materially to the "literary atmosphere" of the place.

Straight Business Methods. — The business methods pursued by the Wilber H. Murray Manufacturing Co., of Cincinnati, are worthy of study and imitation. No sensational or factitious means are employed for advertising; all sales are made direct to consumers; none but the best quality of vehicles and harnesses are made; and these are sold at prices which can be afforded only because of direct dealing and large sales. The new catalogue is very clear and comprehensive, and is sent free on application.

Useful for Dairymen. — "The Dairyman's Account Book" is a convenient calendar, with blank columns and printed headings, in which to enter the milk yield and amount of butter churned every day in the year. There are also blank pages, properly ruled and headed, for recording sales of butter for each month, and other matters useful to dairymen. The Dairyman's Account Book is published by Wells, Richardson & Co., Burlington, Vt., and is sent free to every dairyman on application.

Sale of the Pomona Herd. — Messrs. Ayer & McKinney, of the Meridale Farm, Delaware Co., N. Y., have purchased of Baron von Richthofen the entire Pomona herd of 100 Jersey cattle, and added it to their already fine Jersey herd. The Pomona herd contained a large proportion of closely-bred St. Lambert-Stoke Pogis animals, and as the herd to which they were added had been bred in the same line, the purchase makes the enlarged Meridale herd the largest in the country of the combined blood of the St. Lamberts and Stoke Pogis. Individual excellence is, however, the ultimate standard by which every animal is judged.

Binder Twine.—It requires annually 55,000 tons of Binder Twine to bind the grain crops of the country. Ten years ago all the self-binders in existence required but a few tons. The industry practically started with a visit made by Mr. William Deering, the harvester manufacturer, of Chicago, to Hon. Edwin H. Fitler, a rope manufacturer and the present mayor of Philadelphia. Mr. Deering subsequently found it so difficult to get perfect twine that a few years ago he equipped a large twine factory with the best and most modern machinery, and is now making his own twine. The value of the annual output of binder twine is about $14,000,000.

Good for Orchard Culture. — Mr. J. H. Hale, the distinguished horticulturist and orchardist of Connecticut, writes: "For two years past we have greatly reduced the cost of cultivation in our peach orchards (besides doing better work) by the use of Clark's Cutaway Harrow, a wonderful machine for cutting and tearing up the soil. Yet in the orchard there has been one objection to it, that of turning the soil up out of the middle of the row and gradually banking up toward the trees. Senator Clark, the inventor, is out this season with a new cutaway that can be reversed and so draw the earth away from the trees. A trial in our orchards indicates that it will do the work to perfection, and if it pans out as I now expect it will, before the end of this week our twenty-two acre orchard will have been put in proper shape with it, without any plowing, which even with the most careful driver is likely to do considerable damage to the roots." The implement is manufactured by the Higganum Manufacturing Corporation, South Higganum, Conn. New York office, 189 and 191 Water street.

First-Class Harvesting Machinery.—One of the most notable establishments in the thrifty town of Batavia, N. Y., is the extensive factory of the Johnston Harvester Co. Here are made the Continental Light Steel Binder, the Mayflower Mower, Continental Light Reaper, and the Continental Disk Pulverizer, in various sizes. All of these machines are of the best in design and construction. The Continental Binder has been improved from time to time, until it is now a model of simplicity, certain and efficient operation, durability, and ease of draft. The Continental Mower is made in sizes to cut from four and one-fourth to five feet. The Continental cuts five feet. The Rotary Disk Pulverizer is made in various sizes, from the light No. 1, weighing but 275 pounds, and tilling four feet four inches, to the great No. 24, weighing 750 pounds and tilling 13 feet at each cut. The latter is designed for the great "bonanza" farms of the West. Every implement turned out by the Johnston Harvester Company is of the best material and construction, and is thoroughly tested before it leaves the shop.

Cheaper Than Fifteen-Cent Corn. — Corn at fifteen cents per bushel is pretty cheap food for hogs, as all must admit. Yet scientific swine raisers who have made a study of the subject know how to grow pork costing less than if fed on fifteen-cent corn. It is the great West that develops the best feeders by reason of the fact that the agricultural class must convert their crop into pork or beef in order to make a profit. A. F. Young, of Berlin, Neb., under date of March 26th, gives some valuable hints: "I have long used Dr. Haas's hog remedy and consider it a sure preventive; and, so far as the cost is concerned, it is a cheaper pork producer at fifty cents per pound, than corn at fifteen cents per bushel." A. L. Davis, Syracuse, Neb., says, "What oil meal is for cattle, the Haas remedy is for hogs—a tonic, bracing up the system, stimulating the digestive organs, and as a flesh-producer alone its use is most profitable." We know of hundreds of similar statements showing that it pays to use this preparation as a preventive and flesh-producer, not waiting until the hogs are sick. Write Dr. Joseph Haas, Indianapolis, Ind., for his instructive treatise, "Hogology" inclosing two-cent stamp.

HOOSIER AUTOMATIC
CALF WEANER,
(AHLGRIM'S PATENT.)
GUARANTEED TO WEAN ANY CALF.

The Calf can eat with the weaner on as well as off. It does not fasten on the nose; is attached to good leather halter. It cannot injure cow or calf; halter can be used separate. Will fit any sized calf. If your nearest store does not keep them, send 75c. for Halter and Weaner complete; sent by Express prepaid. Mention this paper. I also manufacture Wrought Iron Fencing as cheap as wood. Wire Work of all kinds. Barbee Wire & Iron Works, Lafayette, Indiana, or 44-46 Dearborn St., Chicago

ALARMED!

Yes, actually scared to death are all the Buggy and Harness men throughout the country. They are howling themselves hoarse for us to stop and give them a show. The immense sale of our "Murray" Buggies and Harness is **SOUR GRAPES** for them, but we still keep on selling our **"MURRAY" $55.95 Buggies and $5.95 Harness** **WORLD RENOWNED** direct to consumers; in fact we have gained such a high reputation on our "Murray" Goods that the people *must have them*, and no others, so we have to keep on making them regardless of the squealing of our would-be competitors. We will, however, say here that we feel sorry for them. In fact

They have our DEEPEST SYMPATHY WHILE We have the LARGEST BUSINESS ON EARTH

and will have to again enlarge our capacity and to accommodate our marvelous growth of trade. **Have You a "MURRAY" BUGGY or HARNESS?** If not, you are one of the few who are behind the times, and the rear of the "Procession of Advancement." If you have not the money to spare to buy a "Murray" Buggy or Harness, the next best thing to do is to write to us for our large illustrated catalogue of these marvelous turnouts, and drown your sorrow by digesting the healthy contents and making the vow, "That the next Buggy or Harness I purchase, Providence willing, will be a "Murray," which is the peer of all others, and don't you forget it.

WATCH OUR IMITATORS!

We have knocked them all out on our straightforward way of doing business, and now many of these disgruntled would-be competitors are trying to copy us; they even go so far as to copy to a great extent our catalogues, etc., thinking that they can dupe the unsuspecting public into their snare by representing to do business like us (but are selling goods that are dear at any price). We are letting them alone for awhile, just to see how long it will take them to work their own ruin.

WATCH OUR IMITATORS. (Continued.)

But lest some of our friends might be enticed into their web, we make these remarks, and while "*a word to the wise is sufficient*," we will say, study our catalogue well, and if you should have any others look at them, and if you see the similarity you will know what's up. Many of these same imitators are making claims to sell cheaper than "Murray," but are making a flat failure of it; for everybody knows we make and sell more of our celebrated "Murray" Buggies and Harness *than all of them combined*; consequently undersell them so far that it makes their heads swim and their business sink.

DON'T FORGET THAT

We sell Direct to the Consumer. That we do not belong to either the Buggy or Harness "Pool" or "Trust," and that we sell our Celebrated **"MURRAY" $55.95 BUGGIES and $5.95 HARNESS** solely on their world renowned merits and unapproachable low prices. Write for Catalogue, containing full Description and Net Cash Prices.

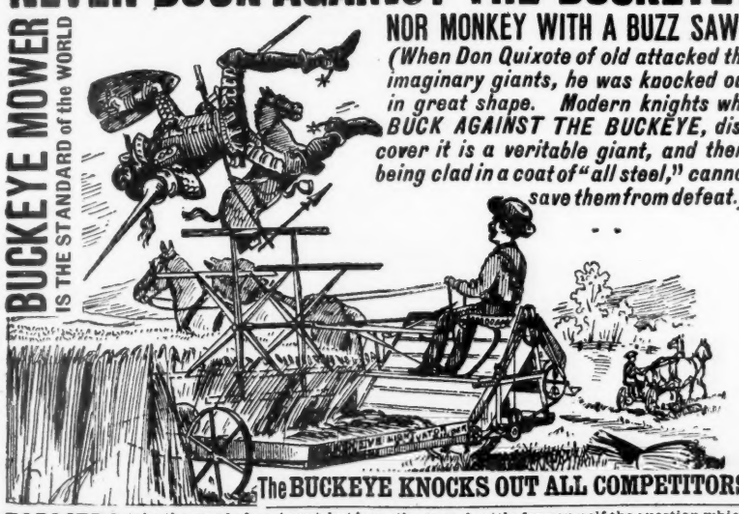
WILBER H. MURRAY MANUFACTURING COMPANY,
"MURRAY BUILDING," 139 West Front Street, CINCINNATI, OHIO.

NEVER BUCK AGAINST THE BUCKEYE!

BUCKEYE MOWER IS THE STANDARD of the WORLD

NOR MONKEY WITH A BUZZ SAW!

(When Don Quixote of old attacked the imaginary giants, he was knocked out in great shape. Modern knights who BUCK AGAINST THE BUCKEYE, discover it is a veritable giant, and their being clad in a coat of "all steel," cannot save them from defeat.)



The BUCKEYE KNOCKS OUT ALL COMPETITORS

FARMERS take the word of no Agent, but investigate and settle for yourself the question which make of Harvesting Machine will best suit your requirements. If you find the famous

BUCKEYE ELEVATOR, BANNER or FRAMELESS BINDER

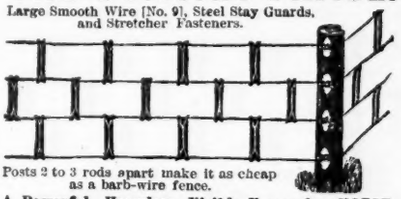
is **stronger, lighter, lighter draft, easier running** and **more durable** than any other, then buy the Buckeye. If your investigations prove the claim that the **Frame of the Buckeye is stronger than any other**—if you find that **the Buckeye KNOTTER has greater capacity and adaptability than any other**—if you ascertain that **the Buckeye has the best cutting apparatus**, and that **it has more good points than any other Binder**, (and you will find that this is true)—then we ask you to purchase it, guaranteeing that **it will give more complete satisfaction than any other** when in active service.

TWINE BUCKEYE TWINE IS LONGER FOR THE PRICE, STRONGER FOR THE PRICE, AND THEREFORE MORE ECONOMICAL THAN ANY TWINE MANUFACTURED.

AULTMAN, MILLER & COMPANY, AKRON, OHIO.

THE DUNCAN FENCE.

Large Smooth Wire [No. 9], Steel Stay Guards, and Stretcher Fasteners.

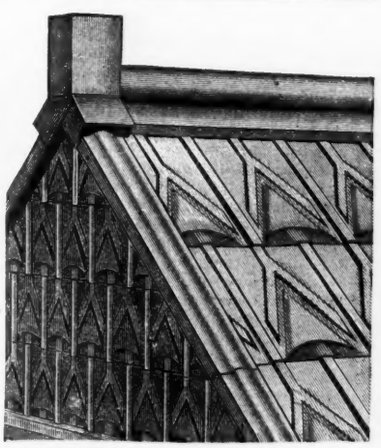


Posts 2 to 3 rods apart make it as cheap as a barb-wire fence.

A Powerful, Harmless, Visible Fence for HORSE PASTURES, FARMS, RANGES AND RAILROADS.

You can build any height, and, by using Hog or Sheep Guards, as close as you wish.
If not for sale in your town, write to

WIRE FENCE IMPROVEMENT CO.,
325 Dearborn St., Chicago.



OVER 25,000,000 square feet of this roofing now in use in the United States, without counting Canada or foreign countries.

SIZES, STYLES and QUALITY to suit every description of house, barn and public building covering. Write for illustrated circular and price list.

National Sheet Metal Roofing Co.,
510 East 20th Street, New York City.

USE THIS HAY LOADER.

THE KEYSTONE HAY LOADER

Will load a ton of hay in 5 minutes. You will make hay easily and quickly, and save help. Often pays for itself in one season. 10,000 sold. *Fully guaranteed.* Loads loose small grain also.

KEYSTONE MFG. CO., Sterling, Ill.

[*Mention this paper.*] Branch Houses conveniently located.

Various Questions and Answers About Superphosphate and Nitrate.

1. "*What is the Chemical Composition of Nitrate of Soda?*" It contains nitric acid and soda. A good commercial article furnishes sixteen per cent of nitrogen.

2. "*To What Crops is It Most Beneficial?*" If there is no deficiency of other elements of plant food, it will benefit any crop that manure will benefit. As a rule, its application will not pay on clover or peas. A good practical rule to determine what crop will afford the most profit from the use of nitrate and other manures is to ascertain the usual price of an ordinary crop per acre. For instance, the price of a fair crop of wheat would be $125 per acre; of potatoes, $50 per acre; of onions, $300 per acre. There are many other things to be taken into consideration, but as a rule the high-priced crops per acre afford the most profit from the use of nitrate and other manures.

3. "*What Properties and Proportions per One Hundred Pounds does it Supply of Itself and from the Land?*" Of itself, it supplies sixteen pounds of nitrogen in a soluble and immediately available condition to be taken up by the roots of plants. The soda is not worth considering in this connection. There are cases where the soda is valuable, but common salt is a very cheap source of it. The effect of nitrate on land is not in itself beneficial. It is not sown to improve the land, but to make crops grow. The larger the crop grown by nitrate of soda alone, the more will the soil be robbed of phosphoric acid, potash, lime, magnesia and other ash ingredients of plant food. If nitrate will not pay for itself the first crop, it will seldom pay at all. If applied to a crop that is largely consumed on the farm and the manure returned, the use of nitrate of soda will permanently enrich and benefit the land, but if the crops are all sold it will impoverish the land in proportion to the extra crops sold.

4. "*What is the Price per Ton?*" From $50 to $60, according to the amount ordered. The Chilian government collects a tax of $10 per ton on all the nitrate that is sold. In spite of all these impediments, nitrate of soda at $50 per ton is the cheapest and best source of nitrogen.

5. "*How Much per Acre is Most Beneficial?*" For wheat, barley and oats, 150 to 200 pounds; for buckwheat, 75 to 100 pounds; for early cabbage, garden beets, cauliflowers and onions, 500 pounds per acre; for late cabbage, celery, carrots, parsnips, mangel-wurzel, Swede turnips, corn and grass, 250 pounds per acre.

6. "*What is the Chemical Composition of Superphosphate?*" Superphosphate is phosphate of lime (or the ash of bones or mineral phosphates) made soluble by the use of sulphuric acid. The sulphuric acid takes away two-thirds of the lime of the bones and converts it into sulphate of lime or plaster. This leaves the phosphate in a soluble condition. Superphosphate, therefore, contains soluble phosphate and sulphate of lime. This is the basis of all the commercial, chemical manures that are manufactured and sold under numerous trade marks or brands. The manufacturers add to the superphosphate more or less (generally less) dried blood, fish scrap, tankage, cotton seed meal and potash. This makes "a complete manure," containing nitrogen, phosphoric acid and potash. Superphosphate itself contains no nitrogen or potash. It is valuable in proportion to the amount of available phosphoric acid that it contains.

7. "*What Crop is Superphosphate Most Beneficial to?*" In England it is used principally for turnips. Here it is used largely for wheat, barley, oats, corn, buckwheat and potatoes.

8. "*What Properties and Proportions per One Hundred Pounds are Supplied by It?*" It furnishes soluble and available phosphoric acid. A fair average superphosphate made from mineral phosphates furnishes about twelve per cent of available phosphoric acid. The superphosphate enables the plants (if it increases the crop) to get nitrogen and potash, etc., in a proportionally increased quantity from the soil. Nitrates rob the land of phosphoric acid and potash; superphosphate robs the land of nitrogen and potash. It is an open question, however, whether, if the superphosphate was not used, the extra quantity of nitrogen which its use enables the crops to take up would not leach away the following winter and be lost. If this is the case, and it is highly probable, then the use of superphosphate only robs the land of the other ash ingredients of plant food.

9. "*How Much Superphosphate per Acre is Most Beneficial?*" For nearly all crops, 300 pounds per acre is all that can profitably be used. More will do no harm, but it will do no good. For wheat, barley and oats, when used alone, 150 pounds per acre is enough. If nitrate of soda is used with it, of course more superphosphate should be used also. They are in no sense substitutes for each other. The more you supply of the one, within certain limits, the more can the plants use of the other.

Hon. Robert A. Nisbet, secretary of the Georgia State Agricultural Society, writes: The AMERICAN AGRICULTURIST is doing a grand work for agriculture, and every farmer in America should indorse and aid it.

Creates An Appetite

There is nothing for which we recommend Hood's Sarsaparilla with greater confidence than for loss of appetite, indigestion, sick headache and other troubles of dyspeptic nature. In the most natural way this medicine gently tones the stomach, assists digestion, and makes one feel "real hungry." Ladies in delicate health, or very dainty and particular at meals, after taking Hood's Sarsaparilla a few days, find themselves longing for and eating the plainest food with unexpected relish and satisfaction.

Hood's Sarsaparilla

Sold by all druggists. $1; six for $5. Prepared only by C. I. HOOD & CO., Apothecaries, Lowell, Mass.

100 Doses One Dollar

A PERFECT SUBSTITUTE
—FOR THE—
WHIFFLETREE.

ENERGETIC, RESPONSIBLE MEN

everywhere should secure exclusive territory for the sale of one of the most valuable inventions of the age, the **Webster Elastic Draught.** This invention consists of two elastic steel springs fastened to under side of cross bar, as shown in the cut, and can be attached to any vehicle or sleigh in 15 minutes. It removes all horse-motion; no shocks or jars; no sudden jerks or starts; no more noise or rattle; no catching of the reins or horse's tail. It gives great ease and comfort. It is far stronger and safer than the whiffletree, and presents a far neater appearance. It is the draught of the future. Thousands of them now used and indorsed by horsemen everywhere. Territory is extremely valuable, as the business is permanent and yields immense profits. Exclusive territory free. We guarantee satisfaction.

Low & Rewell Manufg. Co.,
104 Public Square, Cleveland, O.

PORTABLE SAW MILLS.

Simple, Durable and Fit for all kinds of work.
Send for Illustrated Catalogue.
The LANE & BODLEY CO., - CINCINNATI, O.
ESTABLISHED 1851.

35 YEARS Experience.

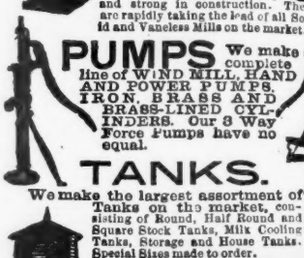
WIND MILLS

THE HALLADAY MILL is acknowledged the Standard Wind Mill of the World, and is made in 18 sizes, 8 to 60 ft. diameter, 1 man to 40 horse power. It is adapted to pumping water for Stock and Dairy Farms, Ornamental and Village Water Supply and Fire Protection, Railway Water Stations, Irrigation, Drainage, Etc.

THE HALLADAY is made upon honor and guaranteed THE MOST POWERFUL, DURABLE and BEST REGULATED STORM-DEFYING Wind Mill on the market.

U. S. SOLID WHEEL And STANDARD VANELESS WIND MILLS

These Mills are guaranteed the Best of their class. Are not made cheaply, but heavy and strong in construction. They are rapidly taking the lead of all Solid and Vaneless Mills on the market.



PUMPS

We make a complete line of WIND MILL, HAND AND POWER PUMPS, IRON, BRASS AND BRASS-LINED CYLINDERS. Our 3 Way Force Pumps have no equal.

TANKS.

We make the largest assortment of Tanks on the market, consisting of Round, Half Round and Square Stock Tanks, Milk Cooling Tanks, Storage and House Tanks. Special Sizes made to order.

STANDARD HAY TOOLS

For stacking outin fields and mowing away in barns. The use of a good Hay Carrier and Fork a few hours before a storm, may save many times their cost. We make the most complete line of Horse Hay Tools on the market, consisting of Anti-Friction, Swivel, Reversible and Rod Hay Carriers, Harpoon and Grapple Hay Forks, Pulleys, Floor Hooks, etc.

We also make the HALLADAY STANDARD GEARED WIND MILL, in 11 sizes, 1½ to 40-horse power. Corn Shellers, Horse Powers and Jacks, Stalk Cutters, Feed Grinders, Saw Tables, Tank Heaters, &c. All goods guaranteed. Reliable Agents Wanted in all unassigned Territory.

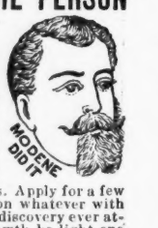
Send for Catalogue and Prices to
U. S. WIND ENGINE & PUMP CO.
Batavia, Illinois, U.S.A.
BRANCH HOUSES:—Kansas City, Mo., Omaha, Neb.
DEPOTS:—Boston, Mass., Ft Worth, Texas.

MADE WITH BOILING WATER.
EPPS'S
GRATEFUL—COMFORTING.
COCOA
MADE WITH BOILING MILK.

HAIR ON THE FACE, NECK, ARMS OR ANY PART OF THE PERSON

DISSOLVED AND QUICKLY REMOVED WITH THE NEW SOLUTION

MODENE



AND THE GROWTH FOREVER DESTROYED WITHOUT THE SLIGHTEST INJURY OR DISCOLORATION OF THE MOST DELICATE SKIN. DISCOVERED BY ACCIDENT.

IN COMPOUNDING, an incomplete mixture was accidently spilled on the back of the hand, and on washing afterward it was discovered that the hair was completely removed. We purchased the new discovery and named it MODENE. It is perfectly pure, free from all injurious substances, and so simple any one can use it. It acts mildly but surely, and you will be surprised and delighted with the results. Apply for a few minutes, and the hair disappears as if by magic. It has no connection whatever with any other preparation ever used for a like purpose, and no scientific discovery ever attained such wonderful results. **IT CANNOT FAIL.** If the growth be light one application will remove it permanently, the heavy growth such as the beard or hair on moles may require two or more applications before all the roots are destroyed, although all hair will be removed at each application. Young persons who find an embarrassing growth of hair coming, should use Modene to destroy its growth. **RECOMMENDED BY ALL WHO HAVE TESTED ITS MERITS.—USED BY PEOPLE OF REFINEMENT.**

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Acquiring Government Lands.

The process of taking a claim is generally described in Western Kansas as "putting your papers on it"; in fulfilling the conditions necessary to enable the claimant to get a title deed to the same you are said to be "holding down your claim." In exercising the right of preemption or taking a homestead, the chief condition to be observed is, that the claimant shall be a citizen of full age or head of a family, and dwell continuously on the land. If it were possible to put papers on a claim, and then go East or somewhere else to live till the country should get settled up, many would take farms who don't do so now. Of course in such a condition of things a long time would elapse before the country became settled; seeing it would be "full of absentees," as the Irishman said of the "Green Isle." If one should wish to acquire both "preemption and homestead" rights, the proper way is to preempt first; and when the required conditions have been fulfilled the government price on the claim is paid on 160 acres (the ordinary size of a claim); within railway limits the price is $2.50 per acre, and outside the limits $1.25 per acre. The price may be paid after six months' occupancy or the settler can claim thirty-three months for it if desired. Of course no one can take a homestead after having first taken a preemption claim till the latter is perfected and paid for. One can not hold down both claims at once. But when the first claim is secured, then one can take a homestead, in which case the claimant must live five years on the quarter section and cultivate it to some extent before it can be proved up. When at the end of that time the homesteader makes proof of having fulfilled the necessary requirements of the law, he takes out a title deed for the land without further payment.

The right to take a tree claim may be exercised without living on the land at all. One-quarter of each section is generally reserved as a tree claim, of course in treeless regions. The timber-culture law is meant to provide for the planting and cultivating of trees, in timberless regions. If it could be properly carried out it would benefit the country in a great measure. It will be understood that each person can only use his right once, and can not invest another with his right. If one takes a tree claim of 160 acres he has a whole year in which five acres must be plowed. Next year the claimant must plow another five acres, and plant the first five with corn or some cultivated crop. The following year he must plow and plant the second five acres with some crop, and the first five with trees or tree seed, and in the fourth year must plant the second five with trees or tree seed, and then he is supposed to cultivate the trees every year. When ten acres of trees are in good growing condition, the settler gets a title deed for the quarter section. It is very little trouble to keep the land for three years, or one can hire it done. The trouble comes when the trees will not grow or can not be kept growing, when the claim is liable to be contested. But in three years the claim will have increased in value, owing to the settling up of the country around, and it may be sold or rather relinquished to another for the increased value. The one you relinquish it to puts his papers on the claim, and begins at the beginning. Sometimes it is sold thus over and over again. Each time the price advances and each new claim-holder begins at the first chapter. At the end of seven or ten years, the place which was intended to have ten acres of forest trees in good growing condition is more destitute of trees than the homesteaders place in the same section. Tree claims are closely watched by those living around. If any holder of such fails to fulfill his part of the contract, his claim is contested at once.

There are some very peculiar things done in connection with this. In one case a man who had a tree claim honestly wanted to do his part and keep it, at least till he could profitably relinquish it. He had made an agreement with a farmer near his place to plow the second five acres. This farmer plowed a little less than five acres, and told a neighbor beside him that he meant to contest the claim for himself when the day of grace should expire. The time was to be up on a Tuesday, but the neighbor who had been told of this ambitious granger's plans defeated them by taking his team out on the Sunday morning before and plowing another acre, thus saving the claim for its absent owner. There are scores of cases in connection with land claims which if truthfully told would show that now, as in the days of Solomon, human nature has the same admixture of good and bad and mediocre.

ISABEL STEVENSON, Sheridan Co., Kansas.

More Potash Needed.

Director Whitcher in Bulletin 10 states the results of many experiments carried on in different parts of New Hampshire with potash, phosphoric acid, and nitrogen, in various forms of commercial fertilizers, wood ashes and barn-yard manure, upon corn. The conclusions are that chemical fertilizers, when properly mixed, can fully replace barn-yard manure, and give better results than commercial fertilizers. The proper proportion in mixture for the soils tested is: of phosphoric acid nine to eleven per cent, potash nine to fifteen per cent, and nitrogen two to four per cent, which is far from what the average commercial fertilizers contain, these being chiefly deficient in potash.

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Ayer's Sarsaparilla
Is a certain cure, when the complaint originates in impoverished blood. "I was a great sufferer from a low condition of the blood and general debility, becoming finally, so reduced that I was unfit for work. Nothing that I did for the complaint helped me so much as Ayer's Sarsaparilla; a few bottles of which restored me to health and strength. I take every opportunity to recommend this medicine in similar cases." —C. Evick, 14 E. Main st., Chillicothe, Ohio.

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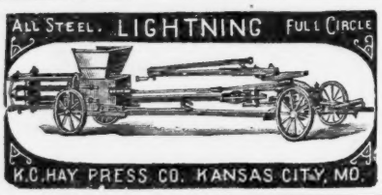

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An Arizona Example Worth Imitating.

JOHN D. EMERSLEY.

In Southern Arizona there is a prosperous cattle owner who has been careful to make provision for each of his children getting a good start in business life. When his first child was born in Texas, many years ago, he set aside a heifer calf as the special property of the little stranger, and selected a brand which it and its increase were to bear. When a steer belonging to the child was sold the price was judiciously invested in putting a heifer or more than one if the amount was large enough in its place. At the birth of his second child he followed the same course. He has now ten children, half of them grown up, and every one has his or her own "bunch" of cattle large or small. As long as a child was too young to look after its own stock the father acted as trustee, and besides giving it range privileges dealt as fairly as if he had been a court-appointed guardian.

The result now is this: Several of the family are married and have moved away to ranches of their own, and these are not only well stocked, but they are managed with a thorough understanding of all the practical details of the cattle-growing business. The girls have their herds the same as the boys, and they are quite as able, if necessity requires it, to "round-up" or "rope" their own cattle on the run as are their brothers. The eldest daughter owns a large herd of well improved cattle and has been courted fully as much, perhaps for her possessions as for her personal attractions. A conviction of this fact may explain why it is that no man has as yet successfully thrown the matrimonial lariat over her. Each chit in the family is able to describe his or her own cattle brand and point out with pride one or two of the stock bearing it as they come up for water.

Surely, here is a practice which not only develops self-reliant ambition in early life, but is calculated to make boys contented to follow their fathers' occupations. The setting aside of a little property for a child is not missed by the parent, and his constant aim to increase its value will have an excellent retroactive effect on his business efforts, especially for himself.

As there was no public school near this ranchman's home he kept a competent private teacher for his children. The eldest son on one occasion rather interfered with the paternal plans by engaging the school-marm to be his special teacher for life, but at the family "round-up," which occurred shortly after, everything it was understood had been made right.

Making Cheese Palatable and Digestible.

DR. A. S. HEATH.

In cheese-making, the whey carries off fully one-half of the natural salts of the milk. This explains why cheese is so indigestible, even in its ripest and most perfect state. Add to cooking-cheese the natural amount of bicarbonate of potash, and you have secured a most nutritious and digestible food. This salt of potash in cooked cheese neutralizes the lactic and other acids contained in excess in the uncooked cheese, and which do not agree with the stomach. We possess in properly cooked cheese the bone, muscle and power essentially necessary to the laboring man. I have cut and carved from Cre Fydd and W. Matthiu Williams, the one a scientific cook and the other a scientific chemist of cookery, a recipe for cooking cheese as follows:

Take a quarter of a pound of grated good cheese, add to it a gill of milk, in which is dissolved half a dram of bicarbonate of potash; that is, at the rate of a quarter of an ounce to a pound of cheese; also a teaspoonful of mustard, half a teaspoonful of white pepper, a grain of cayenne, the sixth of a grated nutmeg, two ounces of butter and two tablespoonfuls of baked flour, or the same quantity of baked bread crumbs. Put them into a porcelain-lined sauce pan, all thoroughly mixed, over a slow fire, constantly stirring until it becomes like smooth, thick cream (but it should not boil); add the well-beaten yelks of six eggs; mix well. Put the mixture into a tin mold and bake in a hot oven twenty minutes and serve hot. Cheese cooked according to the above recipe will supply a valuable article of digestible food, which long experience has amply and happily verified.

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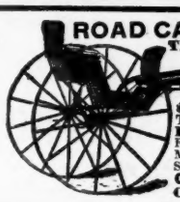

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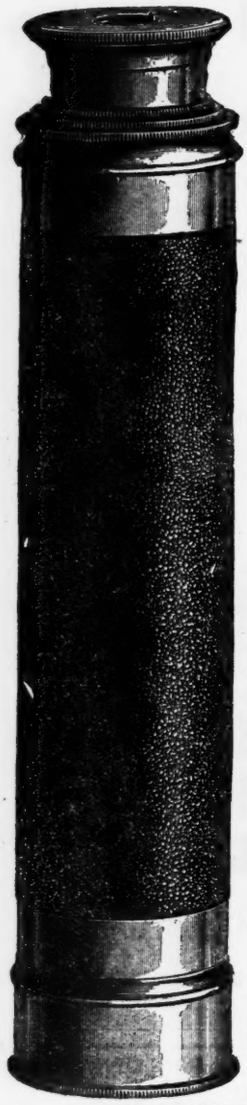

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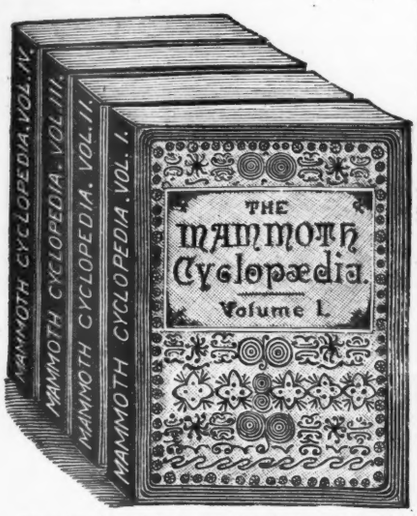

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